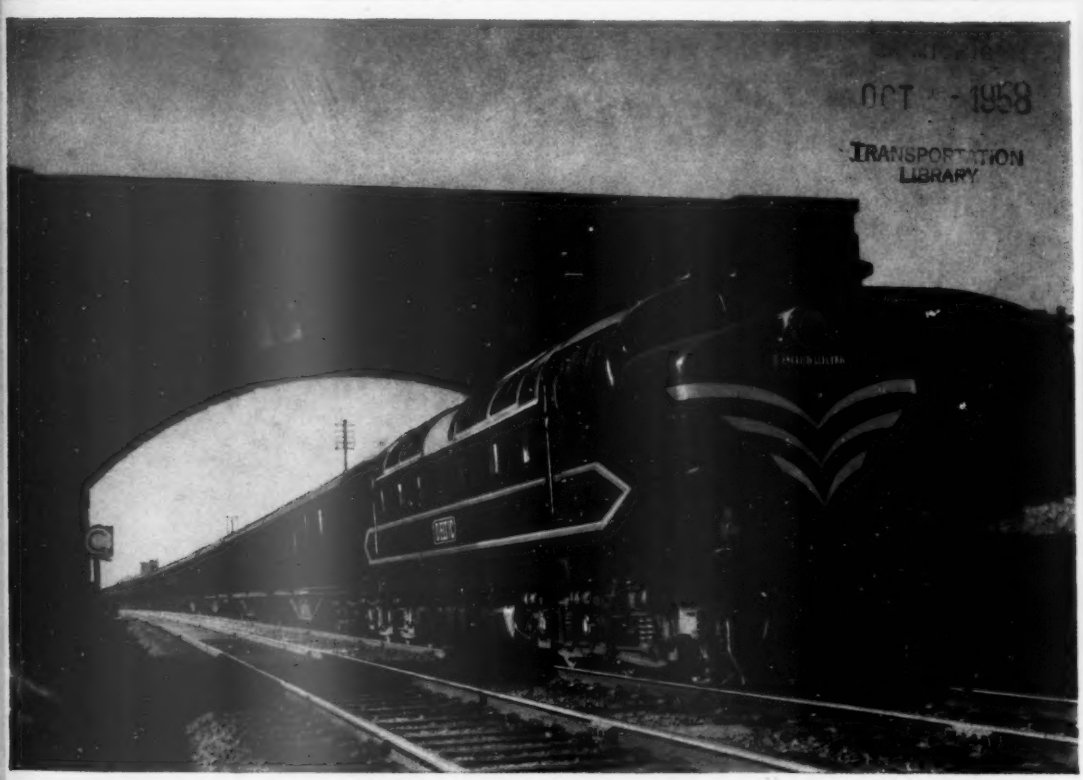
Transportation Library
OCT 1 6 1958

THE RAILWAY GAZETTE

Price: Two Shillings | FRIDAY, SEPTEMBER 26, 1958 | Annually £5 by post



The 'ENGLISH ELECTRIC' 3,300 h.p. DELTIC

Ordered in quantity

Twenty-two of these 3,300 h. p. locomotives, each powered by two 1,650 h. p. Napier Deltic diesel engines, have been ordered for use on British Railways.

ENGLISH ELECTRIC · VULCAN FOUNDRY · ROBERT STEPHENSON & HAWTHORNS

TDD72A

There's a

difference

Top quality may not be quite so rare as the four leaf clover, but be sure of obtaining the best by specifying *Osborn* engineers' cutting tools. The range available includes almost every type of engineers' cutting tool, and these are manufactured throughout from steelmaking to finished product within the same organisation.

MUSHET BRANDS
ENGINEERS' CUTTING TOOLS

Twist Drills
Reamers
Milling Cutters
Lathe and Planer Tools
Toolholder Bits
Hand Chisels
Pneumatic Snaps and Chisels
Files and Rasps
Hacksaw Blades
Taps and Dies, etc.

OSBORN

SAMUEL OSBORN & CO., LIMITED
CLYDE STEEL WORKS, SHEFFIELD.

FINE STEELMAKERS · STEELFOUNDERS · ENGINEERS · TOOLMAKERS

THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation

INCORPORATING

Railway Engineer · TRANSPORT · The Railway News

The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.

RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · Railway Official Gazette

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.

Telephone: WHitehall 9233 (20 lines) *Telegrams: "Trazette Parl, London"*

BRANCH OFFICES

GLASGOW: 139, Bothwell Street, C.2 . . . . . *Central 4646*

NEWCASTLE-ON-TYNE: 21, Mosley Street . *Newcastle-on-Tyne 22239*

MANCHESTER: Century Insurance Building, St. Peter's Square *Central 7667-8-9*

BIRMINGHAM: 90, Hagley Road, Edgbaston . . . . *Edgbaston 2466*

LEEDS: 70, Albion Street . . . . . *Leeds 27174*

BRISTOL: 8, Upper Berkeley Place, Clifton . . . . . *Bristol 21930*

Annually £5 by post. Single copies, Two shillings.

Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Editor: B. W. C. Cooke, Assoc. Inst. T.

Vol. 109] FRIDAY, SEPTEMBER 26, 1958 [No. 13

CONTENTS

	PAGE
Editorial Notes	381
Transport at Scarborough	383
Railways as a Career	384
British Transport Commission Traffic Receipts	385
Eastern and North Eastern Regions Winter Services	385
Letters to the Editor	386
The Scrap Heap	387
Overseas Railway Affairs	388
Main Line Coaches for Rhodesia	390
Keyset-Operated C.T.C. System on the Swedish State Railways	392
Electric Traction Section	395
New Bogies for Moscow Underground Vehicles—1	396
Personal	401
New Equipment and Processes	404
News Articles	406
Contracts and Tenders	409
Notes and News	409
Railway Stock Market and Official Notices	412

Funds for Commonwealth Development

THE needs of the larger under-developed territories of the British Commonwealth include extension and improvement of their railways, which are essential to economic development. Although some countries, such as India, have given railways high priority in their plans, railway extension and betterment have been curtailed or postponed in several parts of the Commonwealth through inability to raise money for these purposes—except in some cases where money has been forthcoming from outside the Commonwealth, associated with purchase of motive power, rolling stock, and other railway material from non-Commonwealth sources. It is good, therefore, to learn of the proposals by the Government of the United Kingdom announced earlier this week by Mr. Heathcoat Amory, Chancellor of the Exchequer, at the Commonwealth Trade & Economic Conference in Montreal. Under a new system of loans for economic assistance, independent countries of the Commonwealth will be offered credits under the Export Credits Guarantee Act at the credit rate at which the United Kingdom Government borrows, plus one-quarter per cent. Legislation is to be introduced to provide Exchequer loans to the Colonial territories at the same rate. Other Commonwealth Governments have been invited to contribute to the Commonwealth Development Finance Company. Development boards and similar subordinate authorities overseas—including, presumably, railway corporations—which have already borrowed in their own name, will now be allowed access to the London capital market. This last provision means, apparently, that there will be somewhat less control than previously by the Treasury and other Government departments concerned in London, though obviously some supervision will be necessary to reconcile any conflicting demands from different sources. The Exchequer loans should be of help where it is difficult to borrow in the open market. The amount of money which is available for borrowing at any one moment is limited. Mr. Heathcoat Amory's proposals, though they make the borrowing process easier, do not increase the total available. To what extent other members of the Commonwealth will follow suit, according to their means, is problematical. At all events the importance of ensuring capital for under-developed territories is recognised and the matter is being fully aired. No doubt the home Government realises that on the prosperity of overseas Commonwealth territories depends the prosperity of the United Kingdom, which cannot exist without exporting. Helping to develop Commonwealth territories, including their railways, which can afford valuable markets for British industry, is largely a way of ensuring the continuance of three meals a day, instead of two, for the 55 million persons in Britain.

Major-General Russell

IN an outstanding career, in which transport, both military and civil, has played a very large part, Major-General G. N. Russell, the new President of the Institute of Transport, has had wide experience in many parts of the world. During the 1939-45 war he discharged with great ability the duties of Director of Movements, Middle East, and Transportation Adviser, South East Asia; in addition, for more than two years he had assumed responsibility for all military transport in India. In the course of the past 10 years, his vigour, personality and outstanding administrative ability have done much to raise to a very high level the efficiency of British Road Services. During his Chairmanship of that undertaking, a change in Government brought about a complete reversal of policy. Having built up a national road haulage undertaking, General Russell now became responsible for returning considerable parts of it to private enterprise. Both tasks he performed with equal ability. The 16,000 vehicles which continue to operate under him, through the medium of five limited companies all trading under the name British Road Services, have established a high reputation for efficient operation. His varied experience in transport spheres, both military and civilian, make him a particularly apt choice as the new President of the Institute of Transport.

The Late Mr. D. S. Thomson

THE Canadian Pacific Railway has been bereft of a familiar figure and an outstanding personality in the untimely death of its Vice-President, Mr. D. S. Thomson. Entering the railway at the age of 14, he gained experience by the only way of real value: practical knowledge. His early days in Angus shops, and his subsequent experience in junior clerical grades, formed a foundation on which he was to build an outstanding career. He had an agile brain and a willingness to accept the increased responsibility which must go with promotion. This led him, through various divisional appointments, to a succession of executive positions in many parts of the system. He was selected as the company's first Vice-President of Operation & Maintenance when that position was created in 1953. His ability, wide knowledge of all rail-

way matters, and his long experience made him well suited to his ultimate appointment as Vice-President of the system. The sense of loss on Mr. Thomson's death will not be confined to the Canadian Pacific Railway, and his railway career may be judged as a fine example to the many who will follow him.

Iron Ore Shipments from India

DETAILS of the agreement between the Governments of India and Japan to export 2,000,000 tons of iron ore a year from Orissa to the latter country through the port of Vizagapatam are given on page 409. The new line of the South Eastern Railway from Sambalpur will join, at Titilagarh, the railway from Raipur to Vizianagram built by the former Bengal Nagpur Railway mainly to convey manganese for shipment from Vizagapatam, part of a scheme which included expansion of that port. The increase in railway facilities, it is believed, will be effected with indigenous material as regards civil engineering, signalling, yard and ore-handling equipment. None of the lines concerned is apparently to be electrified, so that a demand may be expected for diesel, or possibly steam, motive power which British builders are in a good position to satisfy. It is a pity that the foreign exchange component, Rs. 15·47 crores (£11·6 million), could not have been obtained from British Commonwealth sources. In view of mining developments, the eventual intention to develop Vizagapatam to handle 4,000,000 tons of ore a year, seems justified.

Overseas Railway Traffics

RAILWAY receipts of South African Railways & Harbours in the week ended June 7, 1958, were £2,946,892, compared with £2,848,279 in the corresponding week of 1957. Receipts in general continued to rise above the previous year's figures in the following weeks, and at August 23 aggregate receipts from April 1 were £59,522,016, compared with £57,399,253 in the corresponding period of 1957. Harbour receipts have, in the main, continued to decline, compared with last year's figures, and at August 23 the aggregate was £3,468,907, compared with £3,488,878 in the same period last year, but Airways receipts have maintained a steady increase with aggregate receipts at August 23 nearly £1,000,000 up on the corresponding figures for 1957. Operating revenues of the Canadian National Railway for the month of July amounted to $62,770,000. Expenses, taxes, and rents totalled $60,041,000, making the net operating income for the month $2,729,000. In July 1957, operating revenues were $65,186,000; expenses, taxes, and rents were $66,067,000, and the net operating income deficiency was $881,000. Canadian Pacific Railway revenues for July were $39,426,410 (against $42,434,848 in July, 1957) and railway expenses $36,541,036 ($39,387,635), resulting in net earnings of $2,885,374 ($3,047,213).

Developments in China

NOT since the early days of this century has there been in any country railway building on the scale on which it now is being undertaken in China. News of progress on the several 4-ft. 8½-in. gauge trunk and secondary lines in different parts of that fast-developing country is recorded elsewhere in this issue. In view of the rapid growth of population and of the development of industry, these lines are only a beginning. The Government rightly considers railways as a pre-requisite for industrialisation. Demands for motive power, rolling stock, electric traction and signalling equipment and other material will be immense. In certain items, such as steam locomotives, China aims at self-sufficiency. In others, such as locomotives for 50-cycle electrification, outside help—in this case that of the French railways and French industry—has been sought. Because supply of fuel oil on a large scale presents difficulties, the future of diesel traction is problematical. There are, however, many recently-developed techniques in signalling and other fields in which British manufacturers excel; and many of them have a good background knowledge based on past experience.

Passenger Services to London Airport

WHEN the House of Commons reassembles, the Minister of Transport will be asked for further details of the various schemes which have been prepared for promoting passenger services between Central London and London Airport. These are independent of the B.T.C. proposals for a conventional railway. As was stated in our issue of July 18, three groups are interested in the project; two proposed to use monorail coaches and the third a lightweight railway running in geodetic tube framework. Obviously, it would be premature to comment on the relative merits of the schemes at this stage, for too little is known of their details, but clearly the provision of a lightweight railway train should have advantages over single coaches. It should enable the provision of fast interval services rather on the lines of the underground system. This would mean that passengers arriving by air would be assured of speedy transport to the centre in trains running at very short intervals. Although the schemes which are being put forward are promoted by independent groups, it would seem probable that at some stage they would come within the sphere of the British Transport Commission, probably as an extension of the organisation of London Transport Executive or possibly the Southern Region. It would hardly be practicable to have a permanently privately owned system of this kind in the centre of the nationalised framework. If that is so there would appear to be good reason for the closest liaison with the B.T.C. from the very earliest stages.

Money for Road and Rail Development

THE development of an efficient road and railway system is vital to the economic life of the nation, but as "The Man on the Line" rightly points out in the current issue of *British Railways Magazine* there is a vast difference between the amounts spent on the two forms of communication. Over the last 10 years, three times as much money has been spent on the roads as on railway track; but, taking all the money invested in transport over this period, out of every £100 spent the road share was £84, and the railways £16. On this basis, the amount of money that is being spent on British Railways modernisation plan compared with the overall expenditure for transport development is very small indeed; there is no doubt, however, that the modernisation projects already completed are paying dividends. The most obvious is probably conversion to diesel traction; introduction of railcars and diesel locomotives has resulted almost everywhere in spectacular service improvements and considerable economies, but main-line and suburban electrification, which is handicapped by complex civil engineering work, is making good progress and this alone should prove a worth-while investment and compare favourably with any road development of similar cost.

Glasgow Suburban Electrification Progress

THE first overhead line wiring on the Glasgow-Helensburgh electrification at 25 kV., 50-cycles, was installed near Kilpatrick Station last week. Besides being the first piece of overhead wiring in the Glasgow suburban area it is the first such work performed in the Scottish Region of British Railways. During the last six months preparatory work for the erection of the overhead equipment has been proceeding steadily: erection and concreting-in of masts, with assembly of fitments to masts for reception of the conducting wires. The erection of masts is by works trains fitted with power equipment. The wiring train is made up of: locomotive, insulator coach, cantilever coach, office and mess coach, two drum wagons, ladder tackle and generator coach, two fitting coaches, workshop coach, and brakevan. The sequence of operations is: first, the running out of the catenary wire from the drum mounted on the wiring train; later, the train covers the same route when the contact wire is paid out likewise from another drum installed on the train. Wiring is being continued, working towards

Glasgow. The contractors engaged for the overhead equipment are Pirelli-General Cable Works Limited, acting under the supervision of Mr. M. S. Hatchell, Chief Mechanical & Electrical Engineer of the Region.

Pruning Little-Used L.T.E. Underground Facilities

THE measures by London Transport Executive to effect economies on the Underground, which include the proposed closure of the Aldwych and South Acton branches and of Mornington Crescent Station, and the reduction, from February, in early and late services, are carefully chosen to cause the least possible hardship to the travelling public. Some people are bound to suffer, including those who will have to pay a 3d. bus fare from or to Holborn Station; at present, using the Aldwych shuttle train, their fares are the same for Aldwych as for Holborn. A few very early or late workers also will suffer from train service curtailments. It is not to minimise these hardships to say that they will be outweighed by the advantages to the London travelling community as a whole, in the form of savings totalling, it is stated, several hundred thousand pounds a year. These economies are essential if London Transport is to make both ends meet. We do not see what more could be done to make the facilities now withdrawn pay their way. Nor are these relatively trifling curtailments of railway facilities incompatible with the policy of encouraging travel by Underground to relieve street congestion. They are simply pruning of moribund branches.

Britain's Tourist Trade

IN 1957, for the third consecutive year, more than a million visitors came to Britain. Included in this number were nearly 280,000 tourists from the United States, representing an expenditure of $133·6 million and 60,000 Canadian visitors, who spent $45·4 million. Rail traffic to many resorts increased considerably during the year. The popularity of railway travel appears to have been only partly due to the coach strike, for the increases in rail traffic in several instances were as high as 30 per cent and were not confined to the period of the strike. Fuel rationing resulting from the Suez situation caused uncertainty and the coach companies to accept only limited bookings at the beginning of the year, but overall signs indicated that holiday traffic by car was heavier in 1957 than in 1956. The thirtieth annual report of the British Travel & Holidays Association stresses the communal benefits from tourism and reports favourable comments from visitors concerning British courtesy and friendliness. Once again, the desirability of simplified frontier controls is pointed out and reference made to the shortage of suitable hotel accommodation: complaints continue to be received regarding the licensing laws and the prevalance of litter.

Keyset Operation of C.T.C.

SINCE the first C.T.C. apparatus was installed in the U.S.A. in 1927, many new C.T.C. systems have been developed in different countries, each of which has brought some improvement in rapidity of operation or general reliability. The system of operation, and the design of the control and indication equipment in most systems installed even up to 1957 was basically similar, however, to that produced 30 years before. A system of C.T.C. operation by means of a keyset, developed by L.M. Ericssons, Signalaktiebolag, Stockholm, and its installation on the Swedish State Railways are described elsewhere in this issue. The first C.T.C. installation on the Swedish State Railways was brought into use in 1955 between Ange and Bräcke on the main line to the North. This installation and all others on the State Railways built or projected are constructed for keyset operation. The experience during these three years is reported to have been very satisfactory. It has been found an advantage for the operator to sit still at a desk instead of moving about to operate a panel. Although a certain amount of movement tends *inter alia* to relieve tedium, the drawbacks of a large track diagram in most conventional systems might well be more apparent in future with the tendency to enlarge C.T.C. areas.

Transport at Scarborough

ALTHOUGH it does not appear likely that transport policy will figure prominently at the annual conference of the Labour Party, which opens at Scarborough on Monday, it is certain to be raised. A resolution on the agenda stands in the name of the National Union of Railwaymen urging a speed up of the review of future transport policy, to which the Party was committed at the 1956 Conference "with the object of such policy being determined in time for early implementation by the next Labour Government." Although other resolutions appear on the agenda, including one asking for a working party to study "the roads, railways, airways and waterways of Britain with the object of making the best possible use of alternative means of transport to relieve road congestion," no major debate is likely. The Executive will probably appease those delegates who press for a declaration of policy by reiterating its pledge to renationalise road haulage, and by undertaking to review with the unions during the year the position of the British Transport Commission finances. The industry, therefore, cannot look to Scarborough to provide any enlightenment as to Labour's transport intentions. It must remain in the dark as to what renationalisation involves on the one hand, and as to what further disturbances the industry can expect should Labour be returned to power, on the other. As next week's conference is probably the last before the general election, the last chance of determining future transport policy by the movement as a whole will have passed without decision being taken.

In some ways this is unfortunate, as it could mean that should a Labour Government accede to power, its transport policy would have to be improvised, and decisions might then be taken without adequate time for full consultation, and consideration as to all the consequences to the industry. This could result if it were compelled speedily to redeem its renationalisation pledge. The manner in which that is carried through could easily determine a Labour Government transport policy. If it were decided to revert to the principles of the 1947 Act, and the less advance consideration there is given to future policy the more likely that appears, and to reconstitute a monopoly of long-distance transport, the greater would be the disturbance. The alternative, advocated, it is believed, by the more practical minded Opposition spokesmen on transport matters, is to limit renationalisation to the removal of those restrictions on the Commission which limit its freedom to expand its road transport activities, both goods and passenger. In that event, there would be no comprehensive acquisition of private haulage firms, but selective acquisition at the discrimination of the Commission. Competition between public and privately-owned road transport would continue. While it is believed this method is preferred by the Party's transport spokesmen in Parliament, it is uncertain whether the transport unions and the constituency parties would accept it as adequately redeeming the renationalisation pledge. The short debate expected at Scarborough may provide some indication as to the lines on which the unions and the rank and file are thinking.

For those engaged in all branches of the industry it is desirable that some clear indication of Labour's transport policy be given. It is as necessary to the Commission in planning its capital investment programme as it is to the smaller operators responsible for other forms of transport. British Railways, in any event, has probably the least cause for concern. In view of the strength of the railway unions in Parliament, the Labour Party tends to favour the railways as against roads, even to the extent of considering that much road transport has been illegitimately stolen from the railways. It would therefore almost certainly encourage the railways at the expense of the roads, and that would presumably include some restriction on "C" licence operations. The main uncertainty for the railways is to what extent a Labour Minister of Transport would wish to interfere with the present structure and organisation of British Railways. When the reorganisation scheme was presented to Parlia-

ment, there was some criticism from the Opposition benches as to the establishment of Area Boards. It was suggested that as fifth wheels to the coach they would be more of a hindrance than a help. This line of attack has not been pursued, and the Boards seem to have become accepted as a permanent feature of the railway scene. The Opposition would be wise to eschew any external interference with the administrative structure of British Railways. For that it is best for the Commission to remain responsible.

In practice, when and if Labour returns to power, it is more likely to be concerned with setting the Commission's finances to rights than with fundamental changes in transport policy for doctrinaire reasons. In attempting that, present indications are it will have its hands full, if it is to avoid the permanent subsidisation of the railways.

Railways as a Career

THE British Transport Commission, railway Regions, and railway unions, fully aware that manpower provides the mainspring of the railway modernisation plan, are working jointly to attract and develop the men of character and ability needed in its implementation. That their combined efforts are proving successful is apparent from a study of present recruitment to railway service. Not long since, the Commission lamented its shortage of first-class technical and administrative ability. New boards and corporations set up after the war absorbed much skilled material: railway salaries lagged behind comparable outside remuneration: railway promotion popularly was believed to be slow and governed by seniority. The Commission has tackled with vigour the problems which lay within its power to solve. Salaries have improved and, although some still lag behind those obtainable elsewhere, finance no longer presents a serious drawback to the young man who favours a railway career. A main reason for his choice is often the realisation that, by serving the railways, he also serves the community. He is under no illusion that his duties in the public service will be light and easy: he faces the challenge inherent in modern railway problems with a strong desire to play his part in their solution. He adds to this ideal the deep-rooted fascination of railways, a fascination now enhanced by the excitement of modernisation.

The substantial measure of security accompanying a railway appointment is not an over-riding consideration. If it were, and the fact were apparent, an appointment probably would not be made. A disproportionate regard for security often betrays timidity—and courage is a necessary attribute of the railwayman. Complete integrity, intelligence, and a sound groundwork in the man's particular field are among the other requirements. Qualified approval is given to academic distinction. The value of first-class university graduation or professional qualification is fully recognised. Nevertheless, the mere possession of a good degree carries no weight with the Commission, which believes that mental brilliance at least should be equalled by strength of character.

Special training schemes cover the four main railway activities—traffic, mechanical, and electrical engineering. Recruitment in part takes place from the staff and in part from the universities, which are covered by nominated officers from headquarters and regional staff. Every man likely to be interested in the Commission's service is approached during his last year of study. The interviewing officer has authority to decline or to recommend applicants for interview by a Central Selection Committee. On the civil engineering side, numbers and quality of both students and graduates have been most satisfactory, and the Commission will be well served if these numbers can be maintained. This favourable position is due almost entirely to the efforts of Sir Alan Quartermaine, until 1951 Chief Engineer of the Western Region of British Railways. In collaboration with Regional Chief Engineers, Sir Alan Quartermaine undertook special duties in the recruitment and training of technical staff. Although the mechanical and electrical engineering sections are not so well placed, there are signs that the position is beginning to improve. This certainly will be the case when the first products join the service from the Mechanical & Electrical Sandwich Scheme which British Railways runs in conjunction with Derby Technical College.

Most of the entrants to the special training scheme on the traffic side come from within the service, and excellent candidates are now coming forward in greater numbers. After qualification by examination, these young men appear before the Central Selection Committee, of which the Commission's Director of Training & Education is Chairman. Two Regional Assistant General Managers and the General Secretary of the Transport Salaried Staffs' Association also serve on this body. Most of the Commission's candidates come from clerical grades, but encouraging results have been reported on the training of men who were cleaners, signalmen, and goods guards. The Traffic Apprentice scheme is no sudden innovation. It has been steadily evolving from its origin on the North Eastern Railway fifty years ago, with additions and modifications drawn from the practice of other companies, to a live and up-to-date training for the needs of the present railway age. As a matter of policy it was extended to the whole of British Railways in 1950, a development made after full discussion at the Joint Training & Education Advisory Council, on which the trade unions are represented.

Once selected, and after an induction course at one of the Commission's residential colleges, the men undergo training specifically suited to their chosen fields. Training is as little left to chance as is initial recruitment. On completion of a three-year period of training, the prospective officer is posted. Thereafter he must win promotion through the normal machinery. Although the Commission maintains a lasting interest in the progress of each man, the belief rightly is held that training and promotion must remain at the complete disposal of the management to which an officer is allocated. Regional Training Committees composed of departmental officers meet trainees regularly to give guidance and advice. There must be no question of divided loyalty or suspicion of influence. Very close selection precedes regional acceptance of a trainee, who henceforth becomes a Regional man. He remains the subsequent responsibility of his Regional General Manager, who ensures his correct training and, in due course, his suitable promotion. Regional officers develop their own methods of training. Standard procedures are undesirable, especially on the traffic side, from which many higher administrative appointments are made.

It is wisely assumed that a knowledge of general business administration is an advantage to railway officers. Use therefore is made of the short Business Summer Schools, university post-graduate courses and, finally and in a few cases, of the Administrative Staff College at Henley. Training courses also are provided in the Commission's residential colleges and some trainees are exchanged temporarily with those of other large industrial undertakings. Every effort is made to ensure that graduate trainees are offered responsible appointments so that a true assessment of each man's progress can be made. Although a certain amount of wastage inevitably occurs, the percentage of loss is relatively small. Despite thorough initial selection, mistakes can and do occur, and a few recruits fail to attain the high standards required. An even smaller number leaves the Commission's service to carry its newly-acquired knowledge elsewhere. This mobility is particularly applicable to the technical side of railway work. It occurred before nationalisation, and probably will continue indefinitely. Such mobility cannot be regarded as an unmitigated evil: it applies to intake as well as to loss, and from it much useful outside experience often is obtained. Losses in the traffic and accountancy sections are much more rare.

An influx of young and enthusiastic material to an established organisation inevitably presents problems. One of the greatest of these is the most effective use of the new talents in the face of strong and long-established older method. Sometimes, to reap the full benefit of the

new training, the older method must give way and even suffer abolition. Because of this necessity, and in accordance with general practice in all businesses, a young, newly-trained officer sometimes must be appointed or promoted over the head of an older and apparently more experienced colleague. The word "apparently" is used advisedly. Mr. Ray Gunter, President of the Transport Salaried Staffs' Association, writes with understanding on this problem in the September, 1958, issue of the *Transport Salaried Staff Journal*. "Surely," he asks, "long years of service should . . . make a man more suitable for the great proportion of salaried jobs on British Railways. He should have learned quite a bit." He adds the comment: "Not in all cases of course. There are those who are unfitted after any length of time to bear increased responsibility. That is why the Association has rejected as stupid that the only criteria for promotion should be seniority." Mr. Gunter considers the attitude of the by-passed officer of long service. He refers to the understandable resentment which sometimes follows a young man on his promotion over other and older men with "many years of loyal service." With fairness, he observes that "the freshness, initiative, and abilities of young men must be used and given proper opportunity," though he adds: ". . . but loyal and experienced servants should not be placed upon the sacrificial altar." He pleads for a more humane and tactful handling of the situation than that often applied today.

There is no doubt that Mr. Gunter has pin-pointed what must be one of the greatest problems of modern human relationship. Admittedly, some younger railwaymen today receive promotion in advance of older colleagues: admittedly, thoughtless behaviour can foment bitterness. But this problem is not faced by railways alone—it is one which has, does, and always will confront organisations of every size as long as progress continues and new methods are evolved. It can be met only by the co-operation and understanding of everyone concerned and by acceptance of the truism that the only really good outcome for both individual and system is the most productive operation of the whole.

British Transport Commission Traffic Receipts

THE only encouraging features of the traffic receipts for Period 9, the four weeks to September 7, are the better showing in British Railways and in ships' passenger receipts. The former, at £12,940,000, slightly exceeded the corresponding figure for last year (£12,455,000). No doubt excursion traffic was affected by the wet August this year, though the weather during the same period of 1957 was not much better. Receipts from long-distance traffic, more particularly between certain industrial districts in the Midlands and North and coastal holiday resorts would have been higher but for the reduction in spending caused by the recession; a good many people in some industrial areas seem to have stayed at home, or travelled less far on their holidays. The passenger receipts from the marine services at £1,259,000 compare well with £1,244,000 a year ago. It would be interesting to know which group of services contributed most; this is not disclosed in *Transport Statistics*.

Mineral receipts continued far below last year's level, at £2,993,000 against £4,081,000. This reflects reduced steel production. Merchandise and livestock receipts at £6,362,000 (£7,735,000) also were below the 1957 equivalent, so continuing the trend of many weeks past. The same was the case with coal class traffic, at £8,031,000 (£9,464,000). Parcels receipts at £4,030,000 were only slightly below last year's figure (£4,071,000) for these four weeks. For the freight-carrying activities (inland waterways, British Road Services, and ships) traffics during Period 9 together totalled £4,197,000, compared with £4,355,000 last year, which shows that despatches everywhere have declined. All forms of transport appear to be suffering in the same way.

For the 36 weeks ended September 7, the aggregate freight, parcels, and mails receipts of the British Transport Commission were £261,561,000, against £278,679,000 for the same period of last year—a situation which must be dealt with vigorously.

—	Four weeks to September 7, 1958		Incr. or decr.	Aggregate for 36 weeks		Incr. or decr.
	1958	1957		1956	1957	
	£000	£000	£000	£000	£000	£000
Passengers—						
British Railways	12,940	12,455	+ 485	99,607	101,820	− 2,213
London Transport:						
Railways	1,775	1,693	+ 82	16,889	15,976	+ 913
Road services	4,276	4,476	− 200	31,629	41,290	− 9,661
Provincial & Scottish buses	5,538	5,206	+ 332	42,239	40,603	+ 1,636
Ships	1,259	1,244	+ 15	5,521	5,500	+ 21
Total Passengers	24,788	25,074	+ 714	195,885	205,189	− 9,304
Freight, Parcels & Mails—						
British Railways:						
Merchandise & livestock	6,362	7,735	− 1,373	63,614	74,351	− 10,637
Minerals	2,993	4,081	− 1,088	31,334	36,371	− 5,037
Coal & coke	8,031	9,464	− 1,433	85,133	86,045	− 912
Parcels, etc., by passenger train	4,030	4,071	− 41	35,562	34,737	+ 825
Collection & delivery, etc.	929	1,013	− 84	8,554	9,260	− 706
Total freight British Railways	22,345	26,364	− 4,019	224,197	240,764	− 16,567
Others—*	4,197	4,355	− 158	37,364	37,915	− 551
Total Freight, Parcels & Mails	26,542	30,719	− 4,177	261,561	278,679	− 17,118
Total	52,330	55,793	− 3,463	457,446	483,868	− 26,422

* Inland waterways freight, road haulage, and ships

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS PERCENTAGE VARIATION 1958 COMPARED WITH 1957

	Four weeks to September 7	36 weeks to September 7
British Railways—		
Passengers	+ 3·8	− 2·1
Parcels	− 1·0	+ 2·3
Merchandise and livestock	−17·7	−14·6
Minerals	−26·6	−13·8
Coal and coke	−15·1	− 1·0
C. & D. services	− 8·2	− 7·6
Total	− 9·5	− 5·4
Ships (passengers)	+ 1·2	+ 0·3
British Road Services, Inland Waterways and Ships (cargo)	− 3·6	− 1·4
Road Passenger Transport, Provincial and Scottish	+ 5·3	+ 4·0
London Passenger Transport—		
Railways	+ 4·8	+ 5·8
Road services	− 4·4	−23·3
Total	− 1·9	−15·2
Aggregate	− 6·2	− 5·4

Eastern and North Eastern Regions Winter Services

IT is encouraging that the Great Northern Line of Eastern Region, despite much pre-electrification permanent way work in progress, is contriving to keep previous long-distance train times in operation with very little alteration. Indeed, between Kings Cross and Leeds, a number of trains have had a few minutes taken off their times, and the new Sheffield Pullman service, as we commented in our August 29 issue, is the fastest that has ever operated between London and Sheffield. The winter services on the Great Eastern Line, which were the subject of an editorial article in our August 29 issue, similarly are the fastest yet attempted to and from East Anglia. Only on the North Eastern Region section of the East Coast main line have certain additions been made to train times; these, as affecting the Scottish Region, were commented on in the September 12 issue.

Some of the bookings of the Sheffield Pullman trains are very fast. The down "Master Cutler" (7.20 p.m. from Kings Cross) covers the 138·6 miles to Retford in 130 min. (64 m.p.h.) and the up train (7.20 a.m. from Sheffield) takes 131 min.

(63·5 m.p.h.). The 11.20 a.m. from Kings Cross is booked to Peterborough, 76·4 miles, in 71½ min. (64·7 m.p.h.) and from Grantham to Retford (33·1 miles) in 31 min. (64·1 m.p.h.); the 3.20 p.m. from Sheffield has the same booking from Retford to Grantham, and one of 25½ min. for the 29·1 miles from there to Peterborough (68·5 m.p.h.). A new 1.12 p.m. non-stop diesel connection from Grantham with the 11.20 from Kings Cross gives Lincoln also the fastest service from London that that city has ever had, in 2 hr. 27 min., and by starting the 3.21 p.m. diesel train from Lincoln at 3.43 p.m., to connect with the up afternoon Sheffield Pullman, a similar service in 2 hr. 32 min. is offered back to London. The 6.19 p.m. from Leeds once again becomes a through service to Kings Cross, instead of a diesel connection involving a change at Doncaster.

As yet, no axe has been applied to the Midland & Great Northern train service. While most branch services in the Eastern Region also are almost identical with those of last winter, not having suffered any curtailment, some of those across country are markedly improved. This applies particularly to the Great Eastern Line services between Cambridge, Newmarket, Bury and Ipswich and Cambridge, Haverhill and Colchester. Between Cambridge and Ipswich the accelerations range from 8 to 35 min., and the normal time of stopping trains, previously from just under 2 hr. to 2 hr. 6 min., has been brought down to between 1 hr. 35 and 45 min. Similarly, whereas the journey from Cambridge to Colchester formerly occupied from 2 to 2½ hr., 2 hr. is now the average time, and the fastest train takes 1 hr. 42 min. as compared with 1 hr. 58 min. In our August 29 issue an editorial article described the extensive accelerations over the main routes of the Great Eastern Line, and referred to the curtailed times between Liverpool Street, Kings Lynn, and Hunstanton; these substantial cuts have been achieved mainly by smarter running times north of Ely of both stopping and fast trains.

In the North Eastern Region the principal development is a further drastic closure of stations between York and Darlington, the only ones now remaining open being Tollerton (with one down and one up train a day), Thirsk and Northallerton; also Ferryhill, Durham and Chester-le-Street (the last-named with two trains each way a day), only remain between Darlington and Newcastle. Seven intermediate passenger stations only open in a distance of 80 miles is probably a record for Great Britain. For some reason not immediately apparent, the times of all down expresses from York to Darlington are increased by 3 to 5 min., leaving three runs only with as fast a timing as 44 min. for the 44·1 miles (compared with a previous fastest of 41 min.), whereas in the southbound direction there are still eight 42 min. and one 43 min. runs, as well as one in 40 min. (66·2 m.p.h.). During the summer it was this run, made in 39 min., that deprived the Western Region "Bristolian" of the distinction of the fastest start to stop schedule in Great Britain.

There is some more extensive closing of stations between Newcastle and Berwick, though not quite as drastic as that south of Newcastle; three remain open between Newcastle and Morpeth, three between Morpeth and Alnmouth, and five between there and Berwick. The down "North Briton" (9.15 a.m. from Leeds) stops additionally at Dunbar and is decelerated in running, so reaching Edinburgh 15 min. later than last winter, at 1.53 p.m. The former down "Fair Maid," now the "Morning Talisman," makes an additional stop at Berwick (1.42/1.44 p.m.), but is 6 min. only later into Edinburgh, at 2.42 p.m. The down "Heart of Midlothian" (1 p.m. from Kings Cross) also is slowed in running, as with only one additional stop (at Alnmouth) it is 16 min. later into Edinburgh than last winter, at 8.46 p.m. The 7.15 a.m. "all stations" from Newcastle to Berwick, and the 10.5 a.m. semi-fast from York to Edinburgh, are both withdrawn, except that the latter runs on Saturdays. Southbound there are few changes, other than the withdrawal of the 8.25 a.m. semi-fast from Berwick to Newcastle.

Among branch-line changes in the North Eastern Region, the Sunday train service between Newcastle and South Shields is withdrawn, and also from all intermediate stations between Penistone and Huddersfield. On weekdays the service between Sunderland, Durham, and Bishop Auckland is considerably reduced. On the other hand, all the new diesel multiple-unit train services recently introduced, in most cases at even interval times and faster and considerably more frequent than the steam services of last winter over the same routes, are maintained in full. In its winter timetables the North Eastern Region follows the lead of the Scottish Region in clearly indicating all the train services and individual trains that normally are worked by diesel units, and in view of the great public attraction of this mode of travel, this is an example which might with advantage be followed by every Region.

Letters to the Editor

(The Editor is not responsible for opinions of correspondents)

Cleanliness of Locomotives

September 19

SIR,—Although it is plain that the formidable difficulties in the way of obtaining cleaning and maintenance staff have compelled the Eastern Section of the Southern Region to give up the unequal struggle to clean their steam locomotives, is it really necessary that the dirtiest of the lot—so dirty that I had to approach within a few feet to discover its name and number—should be No. 30768, hailed but recently as the Pride of Stewarts Lane? The deplorable appearance of this once lustrous locomotive is enough to discourage the most tenaciously enthusiastic driver from retaining any pride in his work, and, in point of fact, one of her drivers confessed to me at Victoria that it depressed him just to see her.

When will British Railways learn that you cannot debase the steed without degrading the rider?

Yours faithfully,

HENRY MAXWELL

106, Ashley Gardens, S.W.1

Round Eucalyptus Timber for Sleepers

August 13

SIR,—Mr. Jorge Guimar Bueno, Assistant Civil Engineer, Paulista Railway, conceived, 10 months ago, the idea of using round eucalyptus timber as sleepers. As is known, round timber is less liable to split than sawn or hewn timber. Despite the general opinion that round sleepers would be a complete failure, tests were initiated at the end of last year, on both ballasted and unballasted track. These were conducted on sidings and on a quarry line.

The results achieved to date are unexpectedly satisfactory, and indeed of much economic significance to many railways. In the cast of the Paulista, the cost of round sleepers is only one-half that of conventional timber sleepers, and it is easy to obtain as many round eucalyptus sleepers as desired. The track on which tests were carried out is in very good condition after almost eight months of use, with no further attention since the sleepers were placed in position. Tamping was much easier and far more efficient, both with crushed stone and earth ballast, with round sleepers than with the ordinary ones.

On the Tatu quarry branch, traffic amounts to approximately half-a-million tons a year. Maximum speed in all test locations is 30 km. per hour (18·6 m.p.h.). Tests were not yet made with higher speeds. Personally I see no reason for not getting equally good results at all speeds. In theory, round sleepers should have a better performance than the conventional rectangular ones (I refer to my letter on rounded edges published in your issue of October 4, 1957).

The sleepers are 2·80 m. long and 0·24 to 0·28 m. in dia. (9 ft. 2 in. by 9½ in. to 11 in.). The gauge is 5 ft. 3 in.

Yours faithfully,

JOSE A DE MARSILLAC

Departamento de Estudos e Pesquisas,
Cia. Paulista de Estradas de Ferro,
Jundiai, Est. de São Paulo, Brazil

THE SCRAP HEAP

Precision

Yesterday I went on the new "Master Cutler," a direct though rather faster descendant of the first express that linked Sheffield and London over a century ago. . . . Punctuality is the essence of business. I can vouch for the "Master Cutler" in that respect. Yesterday it fulfilled its assignment to the minute. True, I gather that Cecil J. Allen, that writer of repute who can spin fascinating stories out of time-tables, rather thought we had lost half a minute somewhere. It only shows how lofty B.R. circles are giving a new sense of time.—*"Peterborough" in "The Daily Telegraph."*

Good Service

On the morning of September 6, I started my homeward journey from Amiens to Dublin *via* Boulogne-Folkestone, with my wife and three children. At Boulogne . . . it was announced that, owing to unprecedented storms in the south of England, Folkestone was completely out of commission, and that our boat would not leave till 11.15 a.m., and would have to be diverted to Newhaven, where it would "probably" arrive in the early afternoon. As we had six pieces of registered luggage . . . we saw little hope of catching our Euston connection (the "Irish Mail" at 8.45 p.m.), and we mentally resigned ourselves to missing the Holyhead boat (and our cabin booked), to seeking hotel accommodation late on Saturday night in London, and to sending various cancelling wires to Dublin. . . . In the event, however, we reached Victoria, *via* Newhaven, at 5.10 p.m., barely three hours later than if we had had a completely normal journey *via* Folkestone. Furthermore, all our luggage arrived by the same train, was most courteously and expeditiously dealt with by the Customs, and we were enabled to reach Euston in ample time to catch the "Irish Mail."

The feat of dealing so smoothly and competently with a totally unexpected emergency situation which included the blocking of some 20 main lines in the south of England, and the diverting of tens of thousands of home-coming holiday-makers with their luggage and of contriving to keep the overall delay to a mere three hours, seemed to me a quite remarkable organisational achievement by British Railways.—*From a letter to "The Times."*

In Reserve

The railway, especially the archetypal, world-changing British railway, must smile quietly to itself when people talk in this counting-house fashion about modernisation, dieselisation, nationalisation and the rest of it, as though it were a dead lump of machinery entirely controlled by us. . . . Old railway-chiefs, in their file-encumbered, plan-strewn, oak-and-horsehair London offices, know better; they do not presume so to account for everything. . . .

There are certain natural, organic movements in the railway. Engines foregather of their own accord, like elephants at a drinking place, often far from industrial centres. At places like Ashford. You rattle through Ashford, in the "Golden Arrow"—and there, suddenly, in the green fields of Kent, there are crowds of black engines, seen against the misty sunlight. Colchester, too, always has about 20 old engines standing nose-to-tail, always with steam up, sizzling away to themselves. At first I used to search for rational, prosaic explanations. Colchester is a garrison town; perhaps the fires in these engines have never gone out since an emergency order, issued in 1940 and never countermanded, for 20 engines always to be at readiness to rush troops to repel an invasion. But these old engines look more suitable for use in obscure East Anglian disasters; one sees them puffing into far stations set on stilts among sea meadows, on that vague and wandering coastline, to evacuate the inhabitants of yet another village, lapped round by the creeping sea. . . .—*Paul Jennings in "The Observer."*

Shedmaster Historian

A man who began his interest in trains at the age of three months, had his first model locomotive at four, and began building a 1¾-in. gauge railway round the garden at 10, has just retired from his post as Shedmaster at Bangor, London Midland Region, after 45 years' railway service. Mr. J. M. Dunn joined the London & North Western Railway in the locomotive sheds at Willesden in 1913. Thereafter he served at Abergavenny, Blaenavon, Llandudno Junction, Nuneaton, and Coventry, and finally was appointed Shedmaster at Bangor in 1944. He has written many articles and books on railways, and devotes all his spare time to a search for railway historical information.

Early Turn

Ah, this is life! To breathe unsullied air,
To gaze on unspoilt vistas far and fair
And, ere the drenching dew forsakes the lawn,
Share the mysterious majesty of dawn.

The shunting yard is silent at this hour,
The glistening sheets betray the midnight shower,
The platform, which last night was baggage-strewn,
Now swept and garnished, comes into its own.

The station cat is there for you to greet,
Purring ecstatically round your feet,
And, to dispel last vestiges of gloom,
Tea, piping hot, straight from the porters' room.

The problems that perplexed you overnight
Seem clear as crystal in the morning light
And, as the early workmen's trains depart,
You face the rush hour with a tranquil heart.

A. B.

L. T. & S. Canal?

Flooding at Ockendon Station, London, Tilbury & Southend Line, Eastern Region, British Railways, after the storm of September 5

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

C.N.R. Winter Passenger Services

Canadian National Railways are to experiment this winter with one trans-continental passenger train service daily instead of two. The decision is based on use and occupancy studies over the past two years. These showed insufficient volume of trans-continental train travel to support the two trains during the winter months, but increasing patronage of overnight, inter-city services.

The new schedule will be announced with the changeover to standard time on October 26. While the "Super Continental" is being retained with its modern passenger accommodation, its elapsed time, coast-to-coast, will be lengthened by a few hours to allow of more intermediate stops.

Over the Christmas, New Year and Easter holiday periods the increased demand for train accommodation will be met by operating extra sections of the "Super Continental" and other main line trains.

During the June-September holiday season the C.N.R. will restore the second trans-continental train, and its "Super Continental" will resume an accelerated three-day schedule between Montreal, Toronto and Vancouver.

SOUTH AFRICA

More Suburban Passengers

An increase of more than 2,000,000 suburban passengers was recorded by the South African Railways during the year ended March 31, 1958, compared with the previous year. The totals were 235,840,275 suburban passengers in 1956-57 and 237,995,937 in 1957-58. The increase was mainly in the third class (non-European passengers).

The grand total of passengers during 1957-58 was 266,788,116, against 265,669,588 during 1956-57. Passengers on other than the suburban services declined sharply, a trend which most world railway companies has been experiencing; the totals were 29,829,313 in 1956-57 and 28,792,179 in 1957-58, a decline of 1,037,134.

Length of Haul

The average distance over which revenue-earning traffic had to be hauled by the South African Railways during 1957-58 was 276 miles, compared with 270 miles in the preceding year.

EAST AFRICA

New Ship for Lake Victoria

The Queen has given approval for the East African Railways & Harbours ship *Victoria* to bear the prefix R.M.S. The vessel is now under construction by Yarrow & Co. Ltd. at Scotstoun, Glasgow. When in operation on Lake Victoria she will carry 500 passengers and motor-cars and refrigerated cargoes.

VICTORIA

One Class Travel

The Government Railways has introduced one class travel on the suburban network.

Previously Melbourne suburban trains catered for both first and second class passengers. In all other capital cities—Perth, Adelaide, Sydney and Brisbane—second-class travel only prevails. The changeover in Melbourne was made on September 15, on which date fares were also increased. Workmen's tickets have been abolished.

One class railway travel is expected to reduce operational costs while the new scale of fares will add £1,300,000 to revenue. Both first and second class tickets are still being issued for country lines but fares have not been raised. The only exception to this concerns country stations on the borderline of the suburban system. Some fares may be increased to prevent the anomaly of country rail fares being cheaper than suburban for similar distances.

The Victorian Railways have 127 suburban electric trains including 27 new blue Harris trains. In the morning peak 119 of these are in use while in the evening 121 are in service.

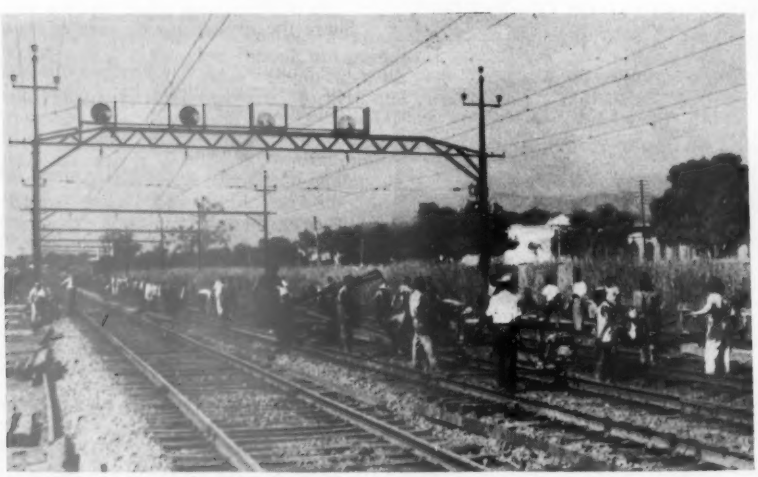
It is thought that the fare rise may, for a time, increase the scramble for seats because on the majority of trains used the first class coaches are more comfortable to travel in. There is not much difference, however, between the two classes on the new Harris trains which will eventually replace the older stock.

Three more of the new trains will be in use by December next and an additional 30 are expected to be ordered soon.

Improved Livestock Service

Additional trains are being run to clear lambs from stations on the Balranald line, at the request of graziers. If there is sufficient patronage, the altered and improved services will be continued during the fat lamb season.

Improving Rio de Janeiro Suburban Lines



Permanent way renewal by the Companhia Brasileira de Sinalizaçao on a Rio electrified suburban line of the Central Railway of Brazil

UNITED STATES

Set-back to Great Salt Lake Fill

The great 13-mile, 31½ million cu. yd. rock-fill in course of construction to carry the Southern Pacific Railroad trans-continental line across the Great Salt Lake received a serious set-back on August 20. Some 2,200 ft. of the fill that was being placed slid into deep water, leaving a gap of that length. Minor similar failures had occurred almost as soon as the affected material had been placed, but it was considered unlikely that it would slide if the bed had had some days to consolidate. In this last instance, however, the placing had taken place six days before the slip occurred, and the failure is believed to be due to the underlying salt layer being softer than encountered elsewhere. Some 2,000,000 cu. yd. of material has slid away and will now have to be used as a wider base for a further fill from bottom-dump barges. These repairs are unlikely to delay the completion of the whole undertaking by the scheduled

date, July 1, 1959. The work was described and illustrated in *The Railway Gazette* of August 17, 1956.

The Santa Fe and San Francisco

The Atchison, Topeka & Santa Fe Railroad has ceased to run its passenger trains into and out of Oakland, California. In any event its San Francisco passengers have to cross Oakland Bay in order to reach the city, and hitherto the Santa Fe has carried them by motorbus over Oakland Bay Bridge between its Oakland terminal and San Francisco.

Now, however, the trains are stopped short at Richmond, 11 miles from Oakland, and the bus journey begins there, with similar operation in the reverse direction. Thereby a slow and awkward piece of railway operation is eliminated, because the 91 level crossings between Richmond and Oakland have made it necessary to allow 35 to 40 min. for this part of the journey. By the change at Richmond the times into and out of San Francisco are cut by 15 min.

Joint Denver-Pueblo Operation

Over the 119½ miles between Denver, Colorado Springs and Pueblo the Denver & Rio Grande Western and Atchison, Topeka & Santa Fe Railroads have independent single track main lines which are now used as a joint double line by the two companies, and also by the Colorado & Southern, a subsidiary of the Burlington group, and the Missouri Pacific. The Santa Fe and Colorado & Southern are now planning to combine certain of their trains between these points.

BRAZIL

Sao Paulo Electrified Suburban Lines

Twenty-two six-car electric trains, similar to those working on the Rio suburban lines, are now running over the Central Railway suburban lines from Sao Paulo to Mogi das Cruzes; there are 126 trains every 24 hr., carrying an average of 80,000 passengers daily in each direction. Steam locomotives and wooden vehicles have been taken out of service.

Fourteen of the 27 electric sets ordered from Japan have been delivered for the Sorocabana Railway suburban lines serving Sao Paulo. Each train unit is made up of three cars.

With the electrification of the above lines and those of the Santos-Jundiai Railway the Sao Paulo suburbs now have a frequent service of fast electric trains.

Central Railway Improvements

Diesel-electric traction has now been installed over the greater part of the Central of Brazil non-electrified system in Minas Gerais and Sao Paulo. In August a train of 52 wagons, hauled by four 1,600 diesel-electric locomotives, conveyed 5,423 tons of iron ore over the mountain section from Lafaiete to Rio.

The metre-gauge Sertao Line, which connects Belo Horizonte to Corinto and Pirapora and links up with E.F.F. Leste Brasileira at Monte Alegre, is worked by 48 1,600-h.p. diesel-electric locomotives. The Central Railway laid 459,000 new sleepers during the first six months of 1958.

Through Running, Parana to Bahia

The Parana-Sta. Catarina Railway and the Leste Brasileira are to be linked up and equipped with a uniform system of compressed air brakes, to permit through running from Parana to Bahia.

Leopoldina Railway Improvements

The current programme of works for the Leopoldina Railway provides for the relaying of 155 miles of line, standardisation of brakes and couplers, and improvements to bridges, repair shops, and so on. The cost is estimated at 855 million cruzeiros.

FRANCE

Rolling Stock Efficiency

During 1957, it is estimated that each S.N.C.F. goods wagon in service was used on the average for the transport of 147,500 *tonne*-km. of revenue-earning traffic. This compares with 136,200 *tonne*-km. in 1956 and 56,100 *tonne*-km. in 1938.

On the passenger side, each coach in service was responsible on the average for 1,980,000 passenger-km. compared with 1,850,000 in 1956 and 69,000 in 1938.

HUNGARY

New Passenger Station at Györ

The recently-opened passenger station at Györ is on the electrified (16,000 V.) main line of the State Railways from Budapest to the Austro-Hungarian frontier station of Hegyeshalom. Separate arrival and departure wings are connected by a subway which also includes a waiting room. The building incorporates a "nursery waiting room," four booking offices and two State tourist bureaux.

WESTERN GERMANY

Upholstering of Second Class Seats

All seats in second-class coaches in long-distance trains of the Federal Railway are now upholstered. The new 85-ft. long carriages, which entered service some time ago, have only six seats to a compartment, and adjustable arm and head rests for each seat.

Publications Received

Trains Illustrated Annual, 1959. Edited by G. Freeman Allen. Hampton Court, Surrey: Ian Allan Limited, Craven House. 10 in. × 7½ in. 96 pp. Price 10s. 6d.—An outstanding item in this miscellany is a comprehensive review by Mr. Cecil J. Allen of passenger train speeds in various countries, should interest all railwaymen concerned with passenger traffic, who have no ready access to the many foreign railway timetables involved. Mr. R. C. Riley contributes a well-written, and, as far as we are aware, accurate account of the London, Chatham & Dover Railway. Nobody who has served or is serving in a Transportation or Movement Control unit of the Royal Engineers can fail to find interest in Mr. J. D. M. Parker's account of the Longmoor Military Railway; some of the incidents recounted will be unfamiliar to many. Other items are accounts of railway working in and around Bristol with a useful map and some good photographic illustrations, and of a journey on the South Yorkshire Joint Line.

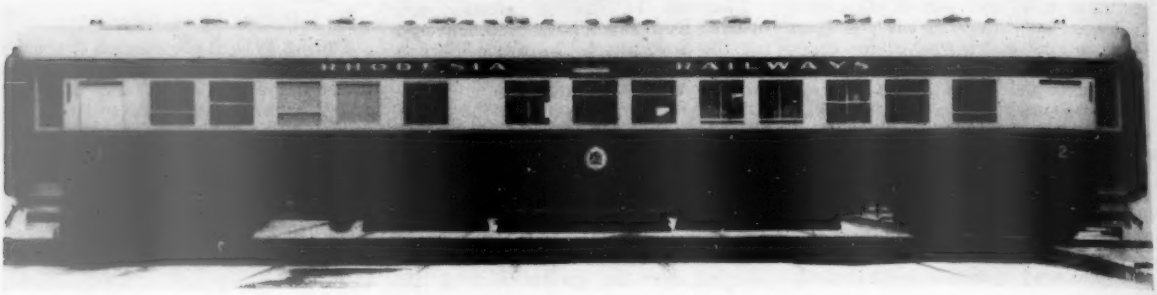
This is Napier.—The current issue of the house journal (Vol. 1, No. 4) continues to record various activities of D. Napier & Son Ltd., marking the 150th anniversary of the formation of the company in 1808 by David Napier. Among these is a review of the anniversary exhibition which was held in London in June. There are also descriptions of some of the recent developments with which the company has been concerned, such as the Eland propeller turbine for aeroplanes, the Napier auxiliary air system for marine application, a Compak 1,200-kW. transportable generating set which incorporates an 18-cylinder Deltic diesel engine. and the prototype 3,300-h.p. Deltic locomotive, running experimentally on British Railways.

Needle Bearings and Cages.—A catalogue and a technical manual have been published describing the range and application of Ina Needle Bearing Company products. The catalogue is arranged with a "thumb"-type index for easy reference to the sections into which the publication is divided. The manual includes useful reference tables and so on, and bearing design and operating details.

Self-Changing Gears Limited House Journal.—A house journal produced by Self-Changing Gears Limited, is to be published quarterly commencing mid-September. Entitled *Transmission Times* it is intended to acquaint readers of the varied activities carried on by the company, including new developments. Firms which wish to be placed on the mailing list for the journal, to be issued free, are requested to write to the Editor, Mr. K. Montrose, Self-Changing Gears Limited, Lythalls Lane, Coventry.

Main-Line Coaches for Rhodesia

Use of plastic veneers for interiors of Gloucester-built first and second class vehicles



First and second class composite main-line coach for Rhodesia Railways

DELIVERIES to Rhodesia Railways are now in progress of the first and second class coaches for main-line service from the Gloucester Railway Carriage & Wagon Co. Ltd. The contract for the stock described in this article covers 27 first class, 25 second, and 12 first and second class composite coaches. Fourth class coaches ordered at the same time were described in our issue of February 7.

Extensive use is made of aluminium anodised mouldings and there is little interior paintwork. Each compartment is fan ventilated and thermally insulated.

Leading dimensions are as follow:—

	ft. in.
Gauge	3 6
Length over vestibules	63 5½
Width over body panels	9 3½
Height—rail to top of roof	12 5½
Floor height above rail	3 9½
Bogie centres	47 6
Bogie wheelbase	6 6
Tare weight (full water tanks)	41 ton 9 cwt.

Passenger accommodation is arranged for 39 seated, or 26 sleeping, in the first class coach, and 52 seated, or 39 sleeping, in the second class. In the composite class coach the first class accommodation is for 18 seated, or 12 sleeping, and 28 seated, or 21 sleeping, second class. Each coach has five full compartments and three coupés.

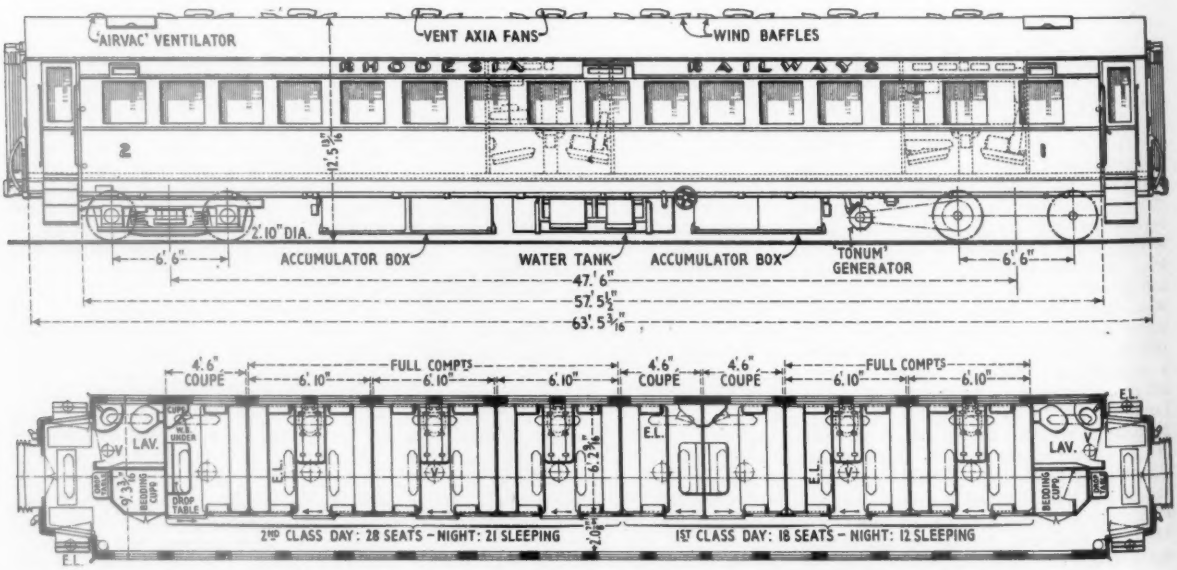
The berths are arranged as two-tier in the first class and three-tier in the second class compartments. To permit stowage of large suitcases under the seats, attention has been given to the minimum depth of seat cushion acceptable for comfortable seating and a seat has been produced using a fair degree of tilt and moulded Dunlopillo cushions of 45-kg. density on a plywood base. Stowage of the berths against the compartment partitions is arranged to give a neat appearance to the compartment. Four armrest cushions are supplied.

Berths and squabs are in moulded Dunlopillo. The tubular berth ladder for each compartment is stowed behind the squab. The corridor ceiling is flat and the space above arranged for luggage stowage, with access from each compartment.

Interior Finish

The compartment body sides are panelled in Formica pink linette glossy, with green linette glossy below the exterior windows.

The sliding door is in green linette glossy, ceilings are in ivory soft glow matt finish. The folding table is covered in cigarette-proof soft glow amulet green. Compartment partitions are faced in green linette glossy below the waist and pink above. In the centre of the upper berth panel is a large mirror, flanked on each side with a coloured landscape photograph. Seat cushions, squabs and berths, are trimmed in grain finish grey Vynide, piped in maroon. Floors are covered in grey marble Leyland rubber pressed tiling and a patterned rug in the centre. Formica-faced timber covings are fitted. Trinket trays



Arrangement and layout of composite coach showing features typical of all vehicles

First class compartment arranged for day travel (left), and in night position (right)

and the tubular guard rail of the corridor luggage rack are in stainless steel.

In each compartment a Levick wash-basin is fitted under the folding table and each coupé has a Burford folding wash-basin with a cupboard above.

The bodyside in the corridor and the sliding doors are Formica-faced in glossy birds eye maple. The corridor partition is faced in green linette glossy. Three continuous stainless steel moulding strips are fitted below the waist line to protect the bodyside panelling against damage from luggage; and there are three electric sockets for vacuum cleaners. Positioned at each end of the corridor is a drinking water dispenser, "toilet engaged" indicator; and at one end a fire extinguisher. Entrance to the toilet is from the vestibule and adjacent to the toilet are the bedding and switch cupboards. The toilet is panelled in ivory soft glow glossy, with waist and corner mouldings in anodised aluminium. The wash basin, lavatory pan, and other fittings are in stainless steel. Marbled grey rubber floor covering, sealed with black extruded rubber coving is fitted. All pipework and the service tank lift pump is enclosed in a double wall.

Two water storage tanks each of 150 gal. capacity are slung on the underframe and a service tank of 95 gal. capacity is roof-mounted over each lavatory.

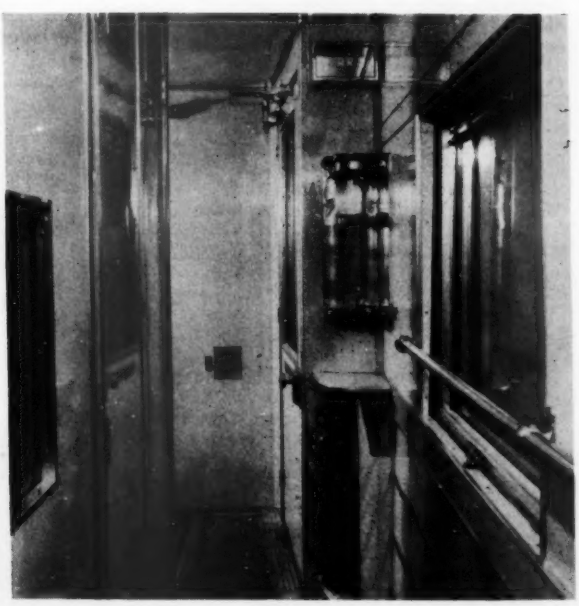
The steel floor sheeting is of $\frac{5}{8}$-in. deep dovetail section and on this is laid $\frac{7}{8}$-in. thick cork slabs. The floor covering is $\frac{3}{16}$-in. rubber bonded to $\frac{1}{8}$-in. hardboard. Coir fibre mats are fitted in the vestibules.

Bogies

The underframe and equalising beam type bogies, fitted with British Timken roller bearing axleboxes, are of the Rhodesia Railways standard type.

(*Continued on page* 394)

Composite car corridor showing extensive use of plastic veneers, and protective strips below waist-line



Drinking water dispenser and fire extinguisher arranged at vestibule of main-line coach

Keyset-Operated C.T.C. System on the Swedish State Railways

Rapid control and indication for relay interlocking installations

Keyset and track diagram at the C.T.C. office in Kiruna on the Ore Railway

THE first Centralised Traffic Control (C.T.C.) installation in Sweden was built in 1938 on the private Stockholm-Saltsjön Railway, 12 route-miles in length. It is operated in the conventional way, that is to say the buttons are situated on the track diagram.

The first C.T.C. installation on the Swedish State Railways was opened in 1955 between Ange and Bräcke on the main line to the North, a distance of 19 route-miles with four stations. This installation, and all others on the State Railways, built or projected, are constructed for "keyset" operation. The next installation was completed in June 1958 and is situated in the north on the Ore line between Kiruna and the Swedish Norwegian frontier, extending over 80 miles with 11 stations.

Other C.T.C. installations are in course of construction between Ljusdal and Ange, 65 miles, and Bräcke-Mellansel, 138 miles, both on the main line to the north.

All these installations have been or will be supplied by L. M. Ericssons Signalaktiebolag.

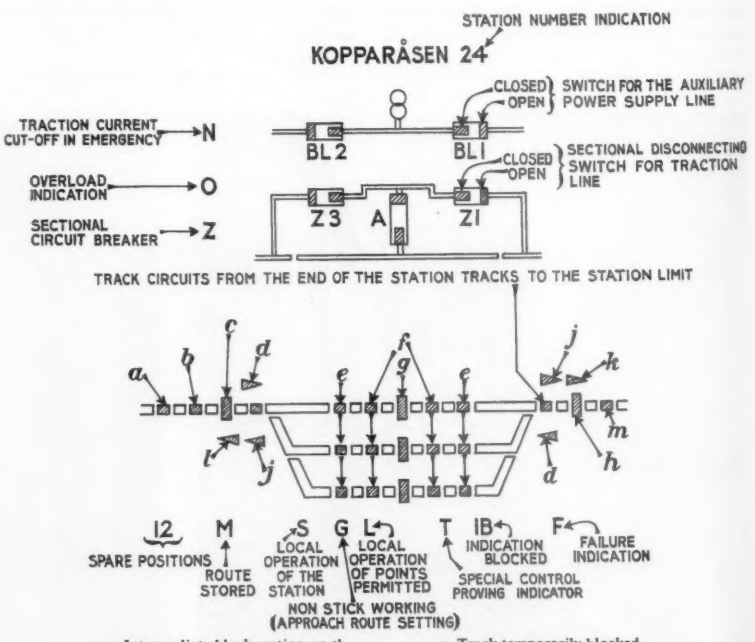
In June 1958 a further C.T.C. installation was opened in Sweden, on a part of the private Grängesberg-Oxelösund Railway. Conversion to C.T.C. of the remainder of the line, the entire length of which is 187 miles, is under way. This installation, however, supplied by Siemens & Halske, is not keyset-operated, the control switches being placed on the track diagram. All the lines are single-track.

Study of Types of C.T.C.

Before the installation of the Ange-Bräcke system, a committee of Nordiska Järnvägsmannasällskapet, the Danish-Finnish-Norwegian-Swedish Railway Association, made a study of the most convenient type of C.T.C. installation for the four Scandinavian countries.

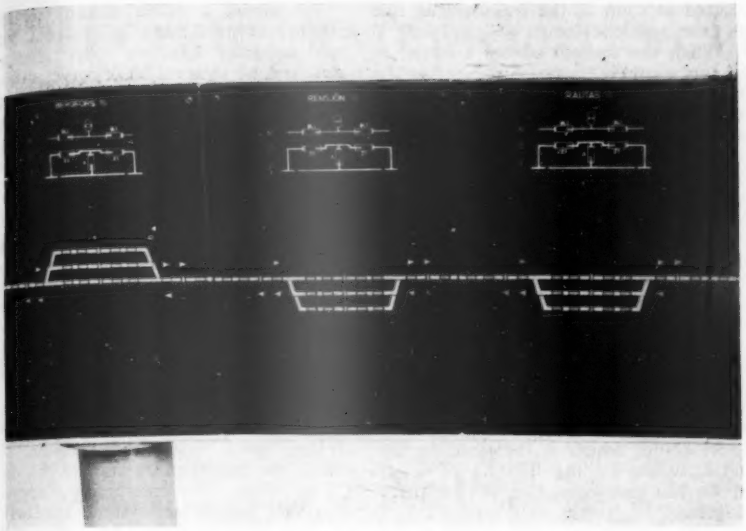
Proposals submitted by the committee in 1954 contained the following recommendations. The stations should be equipped with modern relay interlockings, and the line between them with automatic signals. The safety of working should be fully covered by the interlocking and automatic signalling circuits, relieving the transmission system of any requirement other than that of ensuring complete reliability in the handling of the traffic. To reduce the time of occupancy of the line circuit by the transmission of a control or indication the system must be rapid acting. Furthermore, each control and indication should require as few impulses as possible. Rapid operation necessitated the use of telephone material, which also appeared to offer economic advantages. To ensure maximum reliability in operation, telephone relays should be used, but not selectors or electronic components. It was anticipated, however, that electronic components might be of value at a later date when they had attained full reliability. They would make very fast systems possible. (The Committee recommended 20-25 impulses a sec. as a desirable speed of transmission under present conditions.)

To simplify the work of the C.T.C. operator, the system should be as simple as possible and provide the operator with a good view of the entire track diagram from his desk from which he should also be able to actuate all controls. The ordinary controls and indications should therefore be few in number. The indications were proposed



a Intermediate block section north
b First block section north
c North line blocked
d Home signal
e Route indication
f Indication of track occupation
g Track temporarily blocked
h South line blocked
j Starting signal
k South traffic authorised
l North traffic authorised
m First block section south

General arrangement of track diagram of Kopparasen Station



Part of the C.T.C. track diagram at Kiruna, showing station designations and code numbers

to be divided into two parts, the one comprising normal indications and the other such additional indications as might be required in exceptional circumstances. Finally the system should be easily adaptable to differing conditions.

On electrified railways, the usual case now in Norway and Sweden, cables are already available for both signalling and telephone purposes. Many of these cables are old, however, and have only a few wires available for C.T.C. purposes. The installation of additional cables would be expensive so a rapid acting system, which requires a smaller number of transmission lines, was therefore an important consideration. The C.T.C. installations built by the Swedish and Danish State Railways since 1954 have been largely based on these recommendations.

Ore Railway

On the Ore Railway, between Kiruna and the Swedish-Norwegian border, every station has a modern relay interlocking with route-setting on the entrance-exit principle. On the Ange-Bräcke line the track between stations forms a single block section but on the Ore line is divided by intermediate signals.

Every relay interlocking has a track diagram, with facility for local operation under release from the operator at the Kiruna C.T.C. office.

To reduce the work of the operator, the relay interlockings are equipped to permit the receipt of orders for more than one route at a time; for instance, all orders required for the meeting of two trains at a station can be issued simultaneously.

At the Kiruna office the C.T.C. system consists of a track diagram, a keyset, a train graph, a control transmitter, an indication receiver, and registers. An additional keyset could be installed if demanded by the length of the section of the quantity of traffic. This may be necessary later on, when C.T.C. is extended to other parts of the Ore Line (Luleå-Narvik). Only one two-wire line is used for the transmission of controls and indications. If necessary, separate lines can be used for controls and indications, and more than one line can be used for indications if required by the traffic.

A five-pulse code is used for calling stations from the C.T.C. office. For control of a route, for instance, a six-unit code is added. The impulses are d.c. A control occupies the line circuit for about 0·6 sec. For transmission of indications from a station, the station number is first transmitted with the five-pulse code mentioned above.

One or more groups of indications are then transmitted, every group being represented by seven impulses. Each one of the seven impulses represents a function. The impulses are either positive or negative according to the condition of the indicated function. As mentioned above, the indications are divided into two parts, one of which is transmitted automatically, the other after special order by the operator. The first part is shown on the sections of the track diagram corresponding to the stations, the other on the lamp panel common to the entire track diagram. The time the indications occupy the line circuit varies according to the number of groups to be indicated.

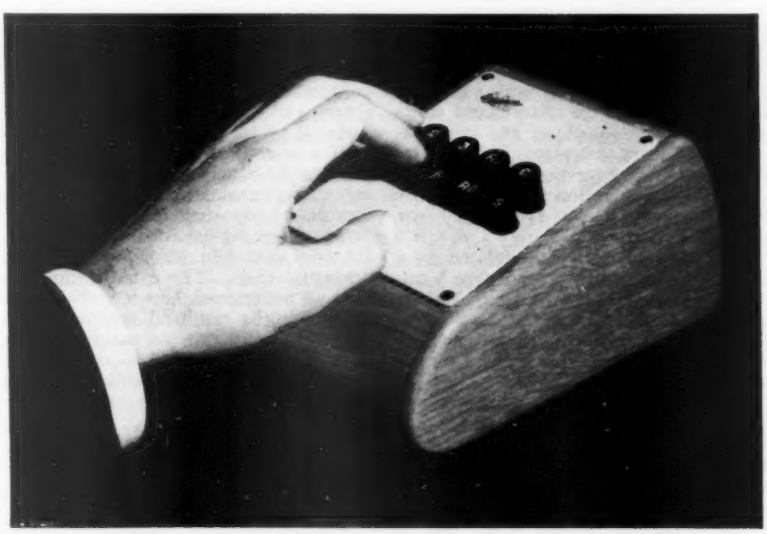
The number of stations which can be operated by the system is 32, the number of controls per station 64, and of indications 98. For the present, two-thirds of these indications are sent automatically and one-third after special order.

As the most important lines are electrified, the C.T.C. system comprises also the control and indication of circuit breakers and disconnecting switches in the railway overhead line and auxiliary transmission line. The C.T.C. office has a train graph on which is shown both the graphic timetable for the line and the positions and directions of the trains.

It is also intended to conduct trials indicating the classes of trains, but it has been found unnecessary to indicate train numbers which would require much more complicated and very expensive equipment. The apparatus will be connected to the normal indicating system and operated by the keyset. The classes of train will be indicated by lamps on the diagram.

Control Equipment

The accompanying illustration shows a section of the track diagram, namely Kopparasen Station with neighbouring



Desk-mounted keyset for controlling the C.T.C. operation

block sections. Between each two stations on this part of the line there are up to three block sections.

The control equipment consists of relay sets for plug and jack connection. The control transmitter forms one relay-set, the indication receiver another, and so on. The track diagram in the C.T.C. office is made up of units, one for each station. These units, too, are connected via jacks, and are therefore easily interchangeable.

The operation of the system is as follows. The position of all trains is shown by the track circuit lamps on the track diagram, and a meeting between two trains at station 24 would be controlled as follows:—assuming that a train coming from the left (north) is to enter the first siding and wait there until another train, coming from the right (south), has passed on the main track, the operator first keys number 2413; 24 being the station number and 13 the route number, that is for approach from north to first siding. As soon as digit 2 has been keyed the key-set is automatically connected to an unoccupied register. After keying of 24, the station number 24 lights on the part of the track diagram representing the station; and, after 13, the digits 1 and 3 light on the lamp panel. After checking that he has keyed the correct figures, the operator presses a start button. The control will then be transmitted as soon as the transmission line is free, and the lamps will go out.

When the control covers a route, as in this example, lamps representing the route and signals start flashing simultaneously with the lighting of the aforementioned lamps. This arrangement still further simplifies the work of the operator. If the operator has keyed wrongly he can cancel the control by pressing a special button. When the control has been executed, this is indicated and shown on the track diagram by the lighting of the route lamps and signal lamps.

The operator can now, in one sequence, key 2412, approach from south for the meeting train 2422, exit northward for the meeting train; and 2423, exit southward for the first train. All these controls are stored in the relay interlocking, which is indicated in the C.T.C. office by the lighting of letter M on the station section of the track diagram.

When the first train has arrived at the station and stopped, controls 2412 and 2422 are executed. When the meeting train has arrived at the station, control 2432 is executed. These operations take place automatically. To provide a check that the first train has stopped, the staff on this train presses a button at the end of the entrance route. For short trains another button is situated at a suitable position.

To cancel a route already set up another control must be sent out, but this becomes effective only after a certain time interval has elapsed, determined by apparatus at the location concerned. Individual points can be operated by special controls, and other controls are possible for functions such as electrical heating of points.

Telecommunications

For several reasons, it must at times be possible to operate the lines without C.T.C., and they are therefore equipped with the same telephone system as normal railways. The telephone system was in fact already installed before the C.T.C. system was envisaged.

Since many of the stations are unattended, it has been necessary to arrange good telephone facilities to enable the maintenance staff to call the C.T.C. office. For emergency purposes a special telephone system has been installed between the C.T.C. office and home, starting, and block signals. When the office is called from a telephone at a signal, the train staff announces to the operator the position, the number, and the direction of the train. The call is then cut off. The operator then calls back to the telephone at the signal. This procedure is adopted to eliminate mistakes as to the positions and directions of trains.

Main-Line Coaches for Rhodesia

(*Concluded from page* 391)

Gresham & Craven vacuum brakes are fitted.

No train heating equipment is arranged but through piping and couplings are installed to enable mixed stock with heaters to be run together. English Steel Corporation 5½-in. × 5 in. central automatic couplers, with Spencer Moulton drawgear, are of the bottom release type.

Lighting and Ventilation

Compartment lighting is by three 20-W. fluorescent tubes. Individual berth lights of 15-W. are also fitted in the first class. Four fluorescent tubes are semi-recessed along the corridor, and one in each vestibule. In the centre of the coach, above the window, is an illuminated destination indicator and by each doorway is an illuminated car number indicator.

Each compartment is ventilated by a centrally-positioned extractor type Vent-Axia 9 in. dia. fan in the roof. This is a single-speed fan recessed in a p.v.c. dome, and has compartment switching. Airvac ventilators are fitted for the toilets.

Power is supplied by an axle-driven link-suspended Tonum generator of 2·75 kW., 110-135 V. output at 17 m.p.h. The battery is a lead-acid Exide Ironclad arranged in fourteen four-cell monoblocs, each of 150-A.-hr. capacity.

The Rawlings Sturdy R.R. Mk. 1 windows are of the balanced full drop type, with rubber sealing. The frameless windows are in polished plate glass ¼-in. thick, except the toilet windows which are toughened glass painted and fired white. Window blinds are of the pinch type and the blind material is in Layhair. Tygan rayon cloth, and window louvre frames, fitted with mosquito gauze, are in Alpax light alloy.

For heat insulation the cellular roof construction is arranged with a ventilated air space below the roof sheet and a 2-in. thick layer of Onozote, with an air space between the Onozote and the Formica-faced hardboard ceiling. The bodyside panels, riveted to pressed and rolled channels, are in 14 b.g. strip mill cold-reduced copper bearing mild steel sheet, and the roof panels in similar material of 16 b.g. thickness. The roof is of a smooth semi-elliptical form, and removable panels are fitted over the service water tanks. The inside of the complete body shell is sprayed with a layer of Limpet asbestos, ½-in. thick in the roof and 1-in. thick in the bodysides and ends. The exterior finish is light stone enamel between the frieze rail and waist rail, and brown enamel below the waist rail. Aluminium paint is used for the roof.

The sub-contractors for these coaches included:—

Vacuum brake equipment	Gresham & Craven Limited.
Wheels and axles	Taylor Bros. & Co. Ltd.
Springs and automatic couplers	English Steel Spring Corporation Limited
Lighting equipment	J. Stone & Co. (Deptford) Ltd.
Draw and buffing springs	George Spencer Moulton & Co. Ltd.
Roller bearing axleboxes	British Timken Limited.
Steel castings	F. H. Lloyd & Co. Ltd.
Iron castings	Gloucester Foundry Limited
Formica bonding	Insulation Equipments Limited
Plastic-faced veneers	Formica Limited
Balanced drop lights	Rawlings Manufacturing Co. Ltd.
Cold rolled steel sections	Ayrshire Dockyard Co. Ltd.
Sliding door gear	Beckett, Laycock, & Watkinson Limited
Limpet sprayed asbestos	F. W. Roberts & Co. Ltd.
Onozote insulation	Expanded Rubber Co. Ltd.
Metallic fittings	Gabriel & Co. Ltd. Jones & Foster Limited James Beresford & Co. Ltd. John Levick Limited
Airvac ventilators	Greenwood & Airvac Limited
Rubber flooring	Leyland & Birmingham Rubber Co. Ltd.
Side entrance doors and louvres	Lightalloys Limited
Vynide	I.C.I. Limited, Leathercloth Division
Vent-Axia fans	Rail Traction Supplies Limited
Parcel racks	Windshields of Worcester Limited
Glass	Pilkington Bros. Ltd.
Aluminium mouldings	Metal Mouldings Limited
Stainless steel mouldings	Metal Sections Limited
Dunlopillo	Dunlop Rubber Co. Ltd.
Blinds	Laycock Engineering Limited
Indicators Berth ladders	Auster Limited

NEW WAITING ROOM AT MANCHESTER EXCHANGE STATION, L.M. REGION.—A new waiting room and inspector's office is being built on platforms 4 and 5 at Manchester Exchange Station, London Midland Region, British Railways. It will be built of a pre-fabricated timber superstructure supported on a pre-cast concrete floor, and the interior will be of hardwood veneer finish. Contemporary lighting will be fitted, with Hille type furniture. Heating will be by electric panel fires.

ELECTRIC RAILWAY TRACTION SECTION

Dual-Voltage Problems

WHEN the French National Railways 1,500-V. d.c. electrification eventually reaches Marseilles, a decision will be necessary as to the system to adopt for future electrification along the Riviera from Marseilles via Toulon and Nice to Ventimiglia. The Paris-Marseilles electrification is the direct successor to the original Paris-Lyons scheme and the proposal to change to 25 kV., 50 cycles in its final stages was not adopted. Electrification has been extended from Lyons to Valence. Marseilles, however, might be considered as the point at which to start afresh and make a change of system. There are already precedents for transition between d.c. and a.c. working at an intermediate point on a route, such as that existing on the S.N.C.F. at Dôle on the line from Dijon to the Swiss frontier at Vallorbe; and it may well have been assumed widely that the choice of the 50-cycle system for the Riviera would be a foregone conclusion. Similar situations are liable to arise in other countries, and it is significant that in France, where the acceptance of the 50-cycle system in all circumstances in future has come almost to be taken for granted, the matter is still a subject for discussion.

The argument for continuing with d.c. traction is based broadly on the fact that the Marseilles-Ventimiglia line would be a 50-cycle "island" between 1,500 V. d.c. (Paris-Marseilles) at one end and 3,000 V. d.c. (from Ventimiglia to Genoa and beyond after conversion of the Italian three-phase system) at the other. Assuming the 1,500-V. electrification to Marseilles to extend through the suburban area as seems likely, dual-system motive power would be requered for the line to Ventimiglia unless locomotives were to be changed outside the city. Even if the dual-system solution were adopted, the locomotives equipped in this way would still be unable to run eastwards beyond the Italian frontier. There are hopes, in railway as in other matters, of a general relaxation of frontier regulations, which would allow through locomotive workings to more logical terminal points than those which have been imposed hitherto by the demarcation between countries. The adoption of d.c. traction would enable dual-voltage motive power to be provided, which is not only a simpler solution than the a.c./d.c. locomotive but one which is already in force in Europe on the Brussels-Antwerp-Rotterdam-Amsterdam line—3,000 V. d.c. on the Belgian National and 1,500 V. on the Netherlands Railways.

Another suggestion to justify continuing with the d.c. system, made in an article in the French periodical *Transmondia*, is that it would allow multiple-unit sets from the Paris suburban area to be transferred to the South to supplement accommodation in the peak holiday season.

Commenting on these proposals, *Transmondia* bases its support for the 50-cycle system in this area largely on the importance to the S.N.C.F. and French industry of a proving ground for the development of dual-system locomotives, so as to maintain the lead already established in this form of traction. It may be wondered, however, whether the demand for such specialised units from other countries would be high enough to justify operating inconvenience, particularly when test running with a.c./d.c. locomotives could well be made between Dijon and Vallorbe. The practicability of dual-system traction, both with locomotives and multiple-unit sets, has been demonstrated already by the New York, New Haven & Hartford Railroad, but there are no indications yet that the principle will be chosen by the Eastern Railway of India for through working to and from Calcutta when the line beyond the Calcutta-Burdwan 3,000-V. d.c. section is electrified at 25 kV., 50 cycles. Similarly, it is often hoped that the experience now being gained by British Railways with the use of two voltages on a 50-cycle system will be valuable in the export field. This may be so, but due regard should be had to the fact that when conditions requiring such special treatment are encountered elsewhere, it may be decided preferable to adopt one of the medium-voltage d.c. traction systems.

Electrical Services in Indian Rolling Stock

FOR some years the increasing number of electrical services in passenger rolling stock, particularly in countries with hot climates, has made it necessary to consider alternatives to a 24-V. battery supply with charging from axle-driven generators. Even where lighting is the only load, the same question is arising with the general trend towards higher standards of illumination. When electric fans or complete air-conditioning are installed, a higher voltage as well as a supply of greater capacity may be desirable in order to reduce current and voltage drop. The recent course of events in India indicates the extent to which electrical supply requirements have been raised. Whereas in the early days of axle-driven generators a 10-coach train of metre-gauge stock provided a night load of about 130 W., a similar formation at the present time consumes some 7·2 kW., but so far the higher load has been met by increasing the current rating of the generators and installing switchgear and cables of larger sizes. The suggestion, therefore, has been made by Mr. S. L. Narayana Iyer, Chief Electrical Engineer of the North Eastern Railway, India, that the time has come to abandon the 24-V. system in rolling stock and to adopt 110 V. A change at this time is considered opportune because of the higher proportion of coaches which will need to be equipped with generators now that train electrical loads have been increased by the extension of fans to third class accommodation. It is estimated that over 80 per cent of the passenger rolling stock will require generating, as distinct from through-wiring, facilities to satisfy the new conditions.

Two methods of supplying current are proposed. One of these is to install diesel-generator sets in brake vans, which would be the general system; and the other, applicable to the rolling stock of certain long-distance express trains making few stops, would be to use 110-V. generators, gear-driven from the axles, in conjunction with storage batteries of high capacity. With the diesel system each set would be capable of supplying the whole train, and 100 per cent standby capacity would be provided by arranging to include two generator-equipped brake vans in every formation. These vehicles would be normal brakes apart from a section of the interior being reserved for the electrical equipment, but the use of vans equipped solely for electrical generation would not be excluded for special circumstances where the electrical load might be exceptionally heavy.

From the emphasis placed on the improvement of train lighting by the extended use of fluorescent tubes, and on various other electrical amenities now familiar in the domestic and catering fields, it would appear that a.c. generation would be appropriate. If it were decided to standardise fluorescent lighting in all important trains, it might be possible to adopt it in the vehicles for which axle-driven generators and storage batteries would be retained by the use of transistor-inverters similar to those now operating in certain first class coaches of the "Caledonian" express of the London Midland Region. When these installations were described in our issue of July 25, it was noted that similar units for a 110-V. d.c. input were being developed. Alternatively, the axle-driven machines might be alternators, from which storage batteries for maintaining essential services during stops might be charged through semi-conductor rectifiers. Studies of a similar system for rolling stock on British Railways are being made to meet the needs of coaches which for some years will have to be suitable for haulage either by steam, diesel or electric locomotives.

New Bogies for Moscow Underground Vehicles—1

Unusual features in Type "D" cars include fabricated construction from pressed sections

(*By a correspondent*)

WHILST the cardan drive used with the latest (type "D") motor cars developed for the Moscow Underground has been described in our issue of August 29, the bogies incorporate interesting features which will be dealt with here. The main data of type "D" cars are summarised in the following table:—

Type "D" motor cars, Moscow Underground

	ft.	in.
Length over body	61	7
Width	8	10½
Height	12	1½
Floor height (mean)	4	0¼
Bogie pitch	41	4
Bogie wheelbase	6	10½
Wheel dia.	2	11⅞
Door width	3	1½
Passengers, seated	44	
Passengers, standing	220	
Power output, one hr. at wheel rim	292 kW.	
Max. speed	47 m.p.h.	
Mean service acceleration, level	2·23 m.p.h. per sec.	
Mean service retardation, level	2·47 m.p.h. per sec.	
Weight, tare	36·2 tons	

The weights of some major components are given below:—

	tons
Bogie (complete)	9·25
Bogie frame	1·35
Automatic (Scharfenberg) couplers	0·3
Traction motor	0·7
Electrical equipment	1·7
Body sheathing	0·96
Axle	0·35
Body frame	3·54
Motor compressor	0·35
Conduit tubes	0·17

Bogie Frame

The tractive resistance values of the all-motor-car trains made up from type "D" units are plotted in Fig. 1 for a variety of operating conditions. The design of the bogie frame is shown in Fig. 2. This consists of two longitudinal and two transverse members, 1 and 2, respectively, made from 10-mm. thick pressed sections welded together into box members. In this respect the design follows the principles enunciated by Kreissig. A gradual change of section and the avoidance of stress concentration between *1* and *2* is facilitated by the 6-mm. thick gusset plates, *3*. The horn guides *4* are 8 mm. thick with 5-mm. thick guide faces. The brake hanger brackets, *5* and *6*, are in cast steel, whilst the brake cylinders are bolted to the end face plates, *7*. The short tubular extensions *8* locate the helical springs of the primary suspension. The hangers of the bolster suspension are carried from cast brackets, *9*, welded to the frame members; the fore and aft motion is checked by the welded faceplates, *10*. The traction motors are carried by the brackets, *11* and *12*, whilst the gear housing is linked to the bogie frame via bracket *13*. Only one bogie of each car has a bracket, *14*, pointed towards the centre of the vehicle. This bracket is used for the automatic brake and acceleration adjusting mechanism.

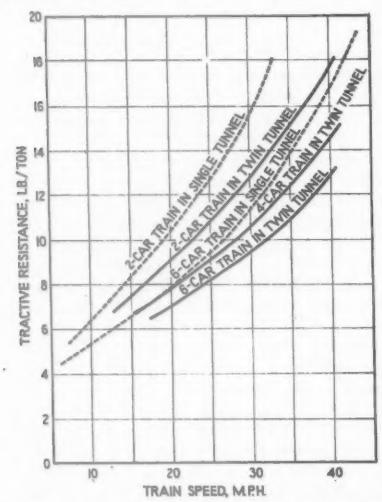

TRACTIVE RESISTANCE, LB./TON
TRAIN SPEED, M.P.H.
2-CAR TRAIN IN SINGLE TUNNEL
2-CAR TRAIN IN TWIN TUNNEL
6-CAR TRAIN IN SINGLE TUNNEL
6-CAR TRAIN IN TWIN TUNNEL

Fig. 1—Tractive resistance of type "D" cars running in 16¾-ft. dia. tunnels

The bogie frame is subjected to the following main loads. The static load, due to body, passengers, and bolster components, amounts to 20·68 tons. Thus at each bolster link the applied load is 5·17 tons compared with 2·585 tons at each axlebox. To this must be added the dynamic load factor which for the service concerned is assumed to 15 per cent. The centrifugal force encountered by each bogie when negotiating 400 ft.-rad. curves at 25 m.p.h. due to the action of the weight of the fully laden vehicle besides the bogie weight is about 2·17 tons. This is applied at 4 ft. 8 in. above rail level and results in a vertical force of 0·473 tons imposed on each axlebox spring, closing the outer ones and unloading the inner ones. The superelevation and the tilt of the body puts an additional load of 0·384 tons on the axlebox springs. The flange forces in curves result in further frame loads. The uneven rail level, difference in wheel dia. and slight differences in the spring characteristics result in twisting loads, the vertical magnitudes of which are some 11 per cent of the static load, i.e. some 0·29 tons acting upwards at one and downwards at the other, diagonally opposed corner of the bogie frame.

With retarding forces applied at the bolster checker plates and assuming a coefficient of adhesion of 0·3, each check plate will have to deal with a force of about 2·7 tons as compared with 1·35 tons at the horn guides, the vertical reaction at the primary springs being 0·12 tons. Additional loads will be imposed due to the action of the traction motors and the reduction gear, the weight and torque of the motor and the reaction at the suspension point of the gear casing. As the result of the action of these forces stresses of up to 8·6 tons per sq. in are encountered at a number of points of the bogie frame, whilst the maximum stresses at the horn guides do not exceed 3·5 tons per sq. in. The bogie frame was tested at loads up to 162·5 tons when it bent, but no cracks or fractures were encountered.

Primary Suspension

The primary suspension, Fig. 3, makes use of helical springs, *1* and *3*. The inner springs are located by the forged guides, *2* and *4*, a 12-mm. thick rubber ring being provided between the latter and the bogie frame. The spring assemblies, together with the guides, *2* and *4*, are replaced as a unit. This is achieved with the aid of a 32-mm. bolt fed through guide, *2*, and threaded into the lower end of *4*, with a box spanner. The outer spring has a mean dia. of 148 mm. and a wire dia. of 27 mm., compared with 97 and 18 mm. for the inner spring; the numbers of working turns are six and nine respectively. The free height is 301 mm. and under the tare load the deflection of the spring assembly is 1⅝ in., increasing to 2¼ in. under full load; the corresponding spring stress is 30 tons per sq. in. As the dynamic deflection is limited to about $\frac{5}{16}$ in. because of the cardan drive between motor and spur gearing, so causing a dynamic stress of only ±3·4 tons, this static stress could be increased, bearing in mind that the dynamic stress for high-quality ground springs can be as high as ±10 tons per sq. in.

Secondary Suspension

The secondary suspension (Fig. 4) carries the body at *1* via a rubber pad, *2*, on the bolster beam, *3*, fitted with pads, *4*. The beam rests on fully-elliptic springs, *5*, in turn sitting on the lower bolster frame, *6*, carried by four 414·5-mm. long swing links, *7*, from the pins, *8*. The frame, *6*, has safety brackets, *9*. The spherical portion of the central support, *1*, has five radial and two circumferential grease grooves, whilst the rubber pad, *2*, is carried in a steel housing; the upper plate has an inward lip and the lower an outward one. The rubber pad has a 272 mm. and 102 mm. outside and inside diameter respectively, and is 28 mm. thick with the 4 mm. thick plates vulcanised to it. The upper beam, *3*, is a welded box section, whilst the lower frame, *6*, makes use of forged longitudinal members and tubular cross members. This frame is 490 mm. long between the two swing links at each side and 1,500 mm. wide. The springs, *5*, are made from 75 × 13 mm. leaves, having a length of 942, 822, 620, 429,

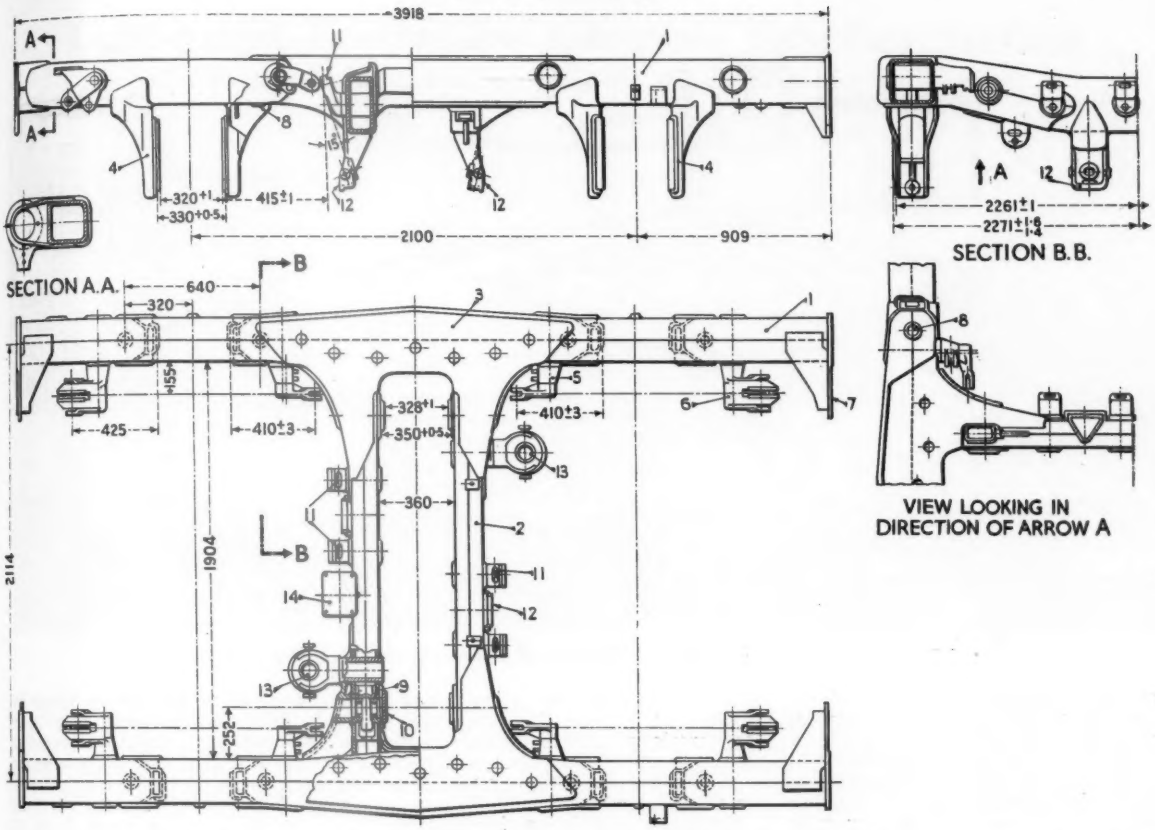


Fig. 2—Bogie frame: side members are of tubular construction

and 220 mm., respectively, and three elliptic spring assemblies are used at each bogie side. The Brinell hardness of the leaves varies between 364 and 413. The static deflection is 1⅛ in. and 3½ in. under tare and full load, respectively.

The bearing surfaces of the swing links are induction hardened to a depth of 1-3 mm. to ensure a Rockwell hardness of 40, whilst the complete link is heat treated to obtain a Brinell hardness of 187 to 241, and every link is subjected to a 20-ton load test maintained for the duration of 3 min. The pin, *8*, has a Brinell hardness of 241-286; and to facilitate withdrawal it has threaded ends. The bolster springs can be replaced by jacking up the body which will also lift the bolster beam, *1*, this making it possible to remove the

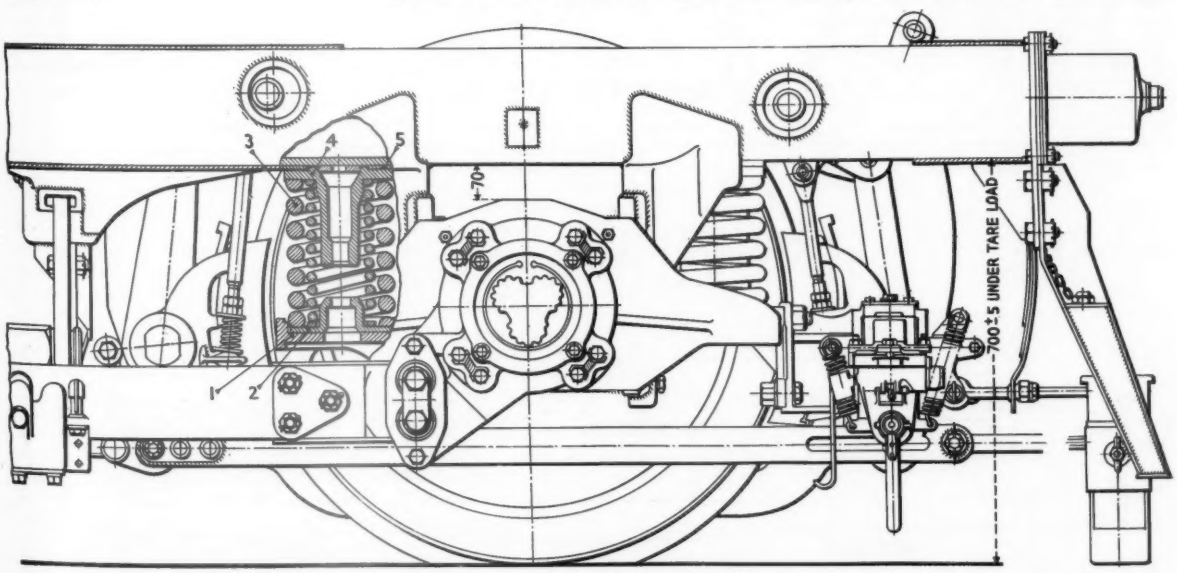


Fig. 3—Primary suspension showing design facilitating spring replacement

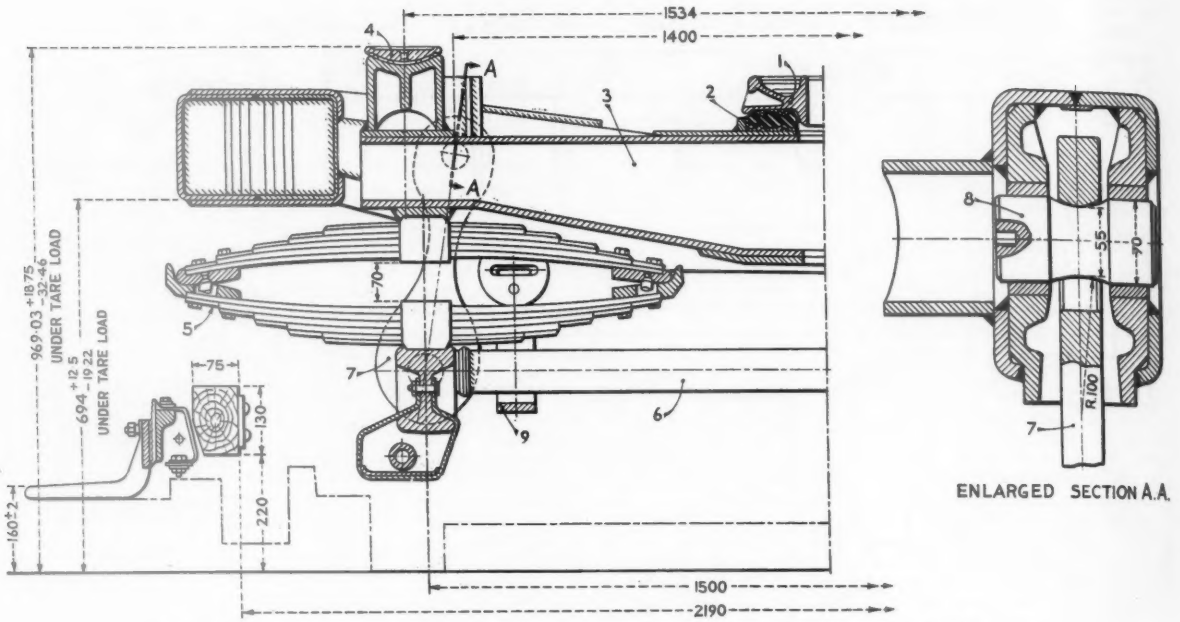


Fig. 4—Bolster suspension showing arrangement of swing link pins and central rubber pad

springs complete, or more conveniently the upper half-elliptic assemblies are removed first. Since no provision has been made for height adjustment in order to avoid threaded hangers, and thus to increase the safety in operation, the height at floor level can vary up to about 2¾ in., depending on the stacked up tolerances.

The axles are 170 mm. in diameter at the wheel seats, this being reduced to 160 mm. towards the centre whilst the journals are 120 mm. in dia. and are carried in two roller bearings in each axlebox. The wheels are pressed onto the axle at a pressure of 60-90 tons.

Normally dynamic braking is used, but the cars are also provided with pneumatic brakes which can be used in emergency as well as in ordinary service. The brake gear is shown in Fig. 5, the brake cylinder is 150 mm. in dia., with 140 mm. stroke and actuates levers *2, 3* and *4*. Lever *2* is suspended from the bogie frame by levers *5* and pin *6*, which is also used to carry the brake block, *7*. The lever, *2*, is 22 mm. thick and is provided with a 16-mm. thick forked end which carries

(*Continued on page* 400)

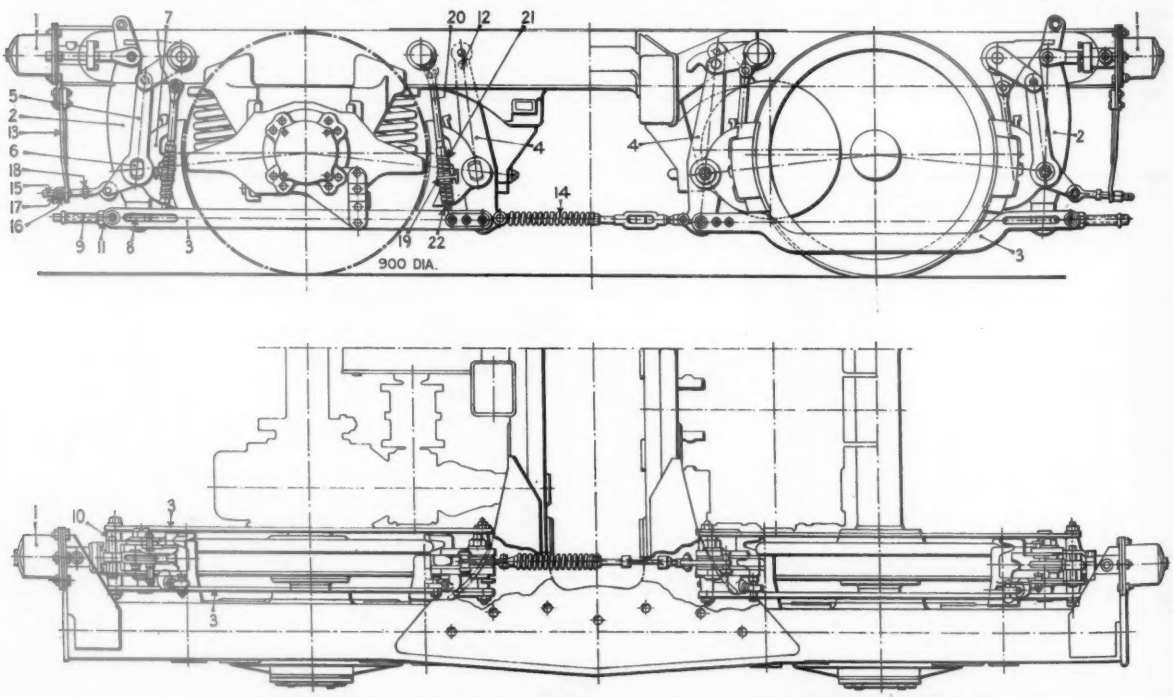
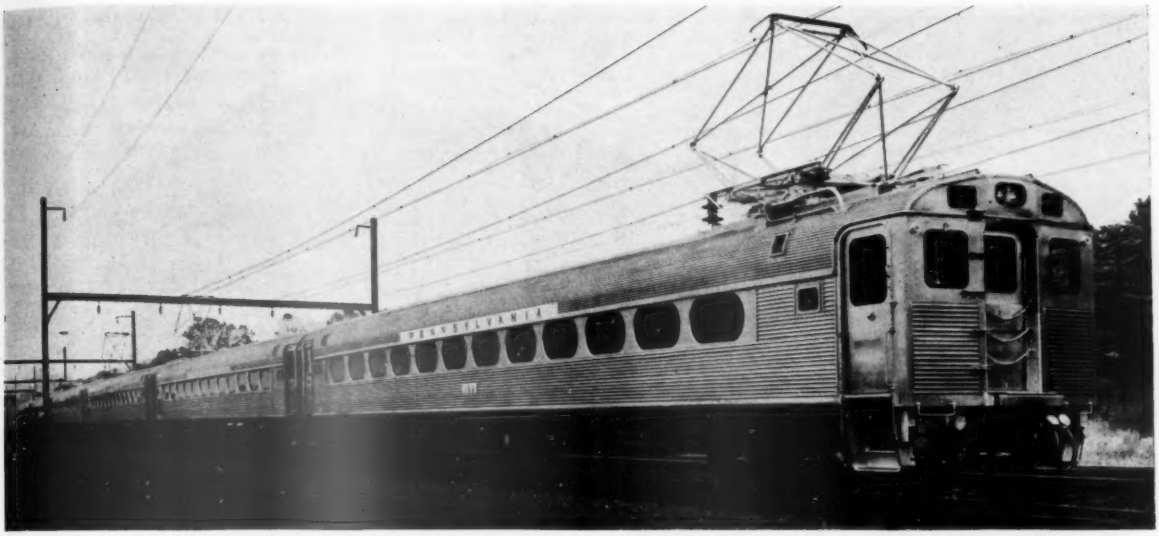


Fig. 5—Brake rigging with four brake cylinders and leaf and helical springs for block release

Light-weight Coaches for Electrified Suburban Services

Multiple-unit design built by Budd for the Pennsylvania Railroad



Six Budd-type stainless steel air-conditioned P.R.R. suburban electric coaches

THE Pennsylvania Railroad has introduced six Pioneer suburban coaches on its residential train services in the Philadelphia area. Based on the prototype Pioneer III coach, described in our issue of August 2, 1957, the new multiple-unit coaches are 85 ft. in length, compared with the 64 ft. of the standard stock in use on the line. Despite the extra length, they weigh only 40 tons against the 58 tons of the older equipment. The six air-conditioned, stainless steel motor coaches were bought from the Budd Company at the price of $1,650,000, but it is estimated that in quantity production the coaches would cost rather less, probably some $200,000 each.

The Pennsylvania Railroad has an option on a further 44 coaches of this type, but has emphasised that the six it has must be run for some months to determine passenger reaction and test new design features. The original Pioneer III coach has now run some 120,000 miles in the U.S.A. and Canada.

The coaches have been designed and built by the Budd Company in co-operation with the engineers of the railway, and meet all strength and safety requirements of the Association of American Railroads, including a buffing load of around 350 tons. They incorporate many features giving increased passenger comfort, have greater seating capacity than the coaches at present in use, are economical in operation, and can be maintained at low cost. Air conditioning and automatic heat control equipment is fitted, and the interiors of the coaches are finished in colour-impregnated plastic. There are seats for 128 passengers in three of the coaches and 125 in the remaining three, which have toilet compartments. The seats are arranged three on one side of the gangway and two on the other. All six cars are motor coaches, each with four 100-h.p. 650-V. Westinghouse Electric d.c. traction motors mounted longitudinally in the bogies and driving through right-angle hypoid gear-drive units. Power is obtained, through Ignitron rectifiers, from the 11,000-V. 25-cycle overhead supply system. Only one pantograph is provided on each coach.

Rapid Acceleration

The light weight of the coaches gives good acceleration characteristics, and 60 m.p.h. can be reached in 47 sec. The top speed is 90 m.p.h. Acceleration is automatic, being controlled by timing relays. On starting, the motors are in series, but are switched to series-parallel connection as speed rises.

To enable them to run singly, as well as in multiple-unit, all the cars are fitted with driving control compartments at both ends. The intention is that during peak hours they will operate as a single six-coach train, but at other times they will be separated into smaller units and operated on different lines.

Two types of bogie are fitted to observe their performance under identical service conditions. Three of the coaches have Budd lightweight motor bogies of unconventional design and weighing less than 6 tons each.

They are of alloy steel stampings welded together and carry the bodies of the vehicles on air suspension. The air springs are mounted on the bolster beams and engage pockets in the coach body next to the side walls.

The other three coaches have slightly heavier cast steel bogies by the General Steel Castings Corporation which are carried on combination air/coil springs. The Budd bogie has disc brakes mounted outside the wheels for easy servicing. These brakes now have finned double discs compared with the single disc of the original Pioneer III brakes. The General Steel Castings bogies have Westinghouse brakes, and all cars are equipped with the Westinghouse air brake system; compressors are mounted on each coach and driven by 6-h.p. d.c. motors.

Each coach has a Safety Industries Inc. air conditioning plant which weighs some eight tons. This circulates cool air in summer and warm air in winter through ceiling ducts running the length of the coach. The system will maintain an inside temperature of 72° F. even when the outside temperature rises to 100° F.

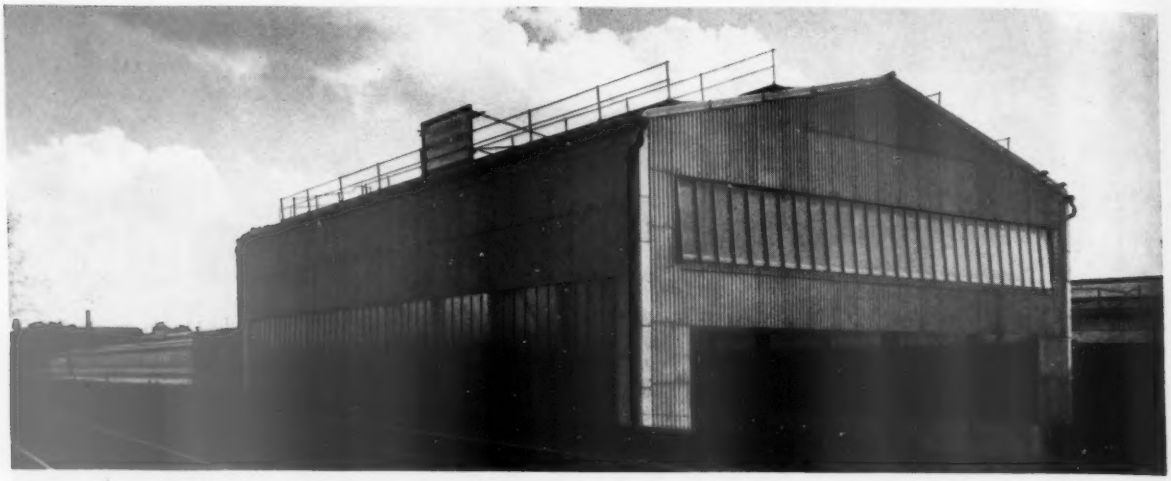
The seats are of foam plastic cushioning on frames fitted with stainless steel backs. The backs can be pushed over so that the passenger can face the direction of travel.

Principal dimensions of the coaches are given in the following table. Those of a standard multiple-unit coach are also appended for comparison.

	Pioneer suburban coaches		Standard P.R.R. multiple-unit coaches
	Budd bogie	*Cast bogie*	
Length over couplers	85 ft.	85 ft.	64 ft.
Passengers	128	125	72
Acceleration	1·3 m.p.h. per sec.	1·3 m.p.h. per sec.	1 m.p.h. per sec.
Weight in service order	39 t. 18 c.	41 t. 12 c.	58 tons
Weight per passenger	697 lb.	748 lb.	1,806 lb.
Weight, bogies	10 t. 10 c.	12 t. 4 c.	21 t. 7 c.

Electric Locomotive Running Shed in Southern Region

Steel-frame buildings at Stewarts Lane, S. London, Depot



Running shed at Stewarts Lane, Battersea, for electric locomotives for Kent Coast services

THE Southern Region depot at Stewarts Lane, Battersea, S. London, is being modernised in preparation for the Kent Coast electrification scheme.

One of the contracts is for the erection of a running shed for the new electric locomotives. This building is of steel-framed construction, with a total length of 360 ft. and a total overall width of 66 ft. A length of 100 ft. of framing at one end of the shed consists of fixed-ended portal frames of 63-ft. span at 12-ft. 6-in. centres, with eaves at about 33 ft. above rail level. The remainder of the framing has free-ended portals, 48-ft. span at 14-ft. 5-in. centres, with eaves at about 17 ft. 6 in. above rail level. A lean-to is built on one side of the lower portion, housing offices, stores, messrooms and workshops.

Crane girders supported on crane stanchions at 25-ft. centres are built-into the high portion for two 25-ton capacity electric travelling cranes. The span between crane rails is about 60 ft. and the height above rail level is 23 ft. 2 in.

Construction

The cladding to the shed is of brickwork to 5 ft. 6 in. above rail level. The remainder of the walls and the roof are clad with an insulated sandwich construction, comprising a one-in. thick bitumen-bonded glass fibre insulant interleaved between corrugated asbestos sheeting and an underlining layer of asbestos cement ribbed sheets. Patent glazing is also arranged in the walls and roof of the shed.

The floor of the shed and lean-to is of reinforced concrete slabs, with a granolithic finish. There are three tracks in the high portion of the building, two of which extend into the lower section. All have inspection pits of a depth of 4 ft. A large pit has also been constructed to house a wheel lathe for truing-up the wheels of rolling stock without dismantling the wheelsets. This will be of the Atlas type manufactured under licence in this country by North British Locomotive Co. Ltd. for Atlas Engineering Company.

The shed will be used for general servicing and overhaul of the locomotives. The work was completed in less than 12 months, some weeks less than the target date. The civil engineering work was undertaken on behalf of British Railways by Holloway Bros. (London) Ltd.

Interior showing high and low sections and pit for wheel lathe

New Bogies for Moscow Underground Vehicles—1

(*Concluded from page* 398)

the links for the 60 × 12 mm. longitudinals, *3*. Link *8* also carries the brake adjusting bolt *9*, 20 mm. in dia., locked in position by the nut, *11*. Additional adjustment is provided with the aid of three pin holes in the longitudinals, *3*.

When released the brake blocks are pulled clear off the wheels by leaf, *13*, and helical, *14* springs, respectively. Springs *13* are assembled from three 76-mm. wide and 4-mm. thick leaves 430, 290 and 188 mm. long respectively.

(*To be continued*)

RAILWAY NEWS SECTION

PERSONAL

Mr. Chan Peng Khuen has been appointed Acting Chief Mechanical Engineer, Malayan Railway, on the retirement, recorded in our June 20 issue, of Mr. A. J. Ball, Chief Mechanical Engineer.

Major-General G. N. Russell, General Manager of British Road Services, Chairman of the British Road Services Board of Management, and a member of the Eastern Area Board of the British Transport Commission, who, as recorded in our March 28 issue, has been elected President of the Institute of Transport for the year 1958-59, will take office on October 1. General Russell became a Member of the Council of the Institute in 1953, and has been a Vice-President since 1955. He has served on the Membership Committee from 1953 and has given papers to many sections of the Institute. He delivered the Henry Spurrier Memorial Lecture on "Transport and the Commonwealth" in London in December, 1957. General Russell was educated at Rugby and at the Royal Military Academy, Woolwich, and was commissioned in the Royal Engineers in 1918. Between the two wars, he served in India, Iraq, and Canada. He specialised in transportation, and was attached to the Great Western and the London & North Eastern Railways for periods of twelve months. He also commanded the 8th Railway Company R.E. for three years. During the 1939-45 war, he was Director of Movements in the Middle East and later responsible for all military transport in India. After the reoccupation of Singapore, he became Transportation Adviser to the Special Commissioner in South-East Asia. In 1948, he was appointed Chairman of the Road Transport Executive (later the Road Haulage Executive). By the end of 1951, nearly 4,000 separate undertakings with 40,000 vehicles were amalgamated to form a national road haulage undertaking, British Road Services. A change of Government brought about a change in policy, and in 1953, General Russell became responsible to the Commission for the return to private enterprise of the greater part of the B.R.S. fleet. The passing of the Transport (Disposal of Road Haulage Property) Act, 1956, brought disposals to an end, and General Russell was responsible for consolidating the remaining 16,000 vehicles and of operating them through the medium of five limited companies, all trading under the name British Road Services. General Russell was made a C.B.E. in 1943 for his services in the Middle East, and C.B. in 1946 for his services in India.

Major-General G. N. Russell
Elected President of the Institute of Transport

The late Mr. D. S. Thomson
Vice-President Canadian Pacific Railway, 1955-58

Mr. O. E. Berringer, General Superintendent, Saskatchewan District, Canadian National Railways, has been appointed General Manager, Western Region, C.N.R. He succeeds Mr. F. H. Keefe, who has retired.

We regret to record the death, on September 16, at the age of 62, of Mr. David Sidney Thomson, Vice-President of the Canadian Pacific Railway. Mr. Thomson was born in Ontario and joined the C.P.R. at the age of 14 as a messenger in the Angus Shops, Montreal. He served in various departments and in the Vice-President's office. After further experience he reached executive rank in 1935 as Assistant Superintendent, Operating, Smiths Falls Division. He became General Superintendent, Toronto, in 1944, and Assistant General Manager, Eastern Region, Toronto, later the same year. He was appointed Vice-President of the Eastern Region in 1948, of the Prairie Region in 1950; and of Operations & Maintenance in 1953. He became Vice-President of the System in 1955. Mr. Thomson was a director of the Canadian Pacific Railway, the Canadian Pacific Airlines, the Toronto, Hamilton & Buffalo Railway Company, Canadian Pacific Steamships, the Toronto Terminals Railway Company, the Vancouver Hotel Company, Northern Alberta Railway Company and the Duluth, South Shore & Atlantic Railroad, in addition to numerous other companies. He was President of the Canadian Pacific Transport Company, the Dominion Atlantic Railway and the Quebec Central Railway.

He was member of the Canadian Railway Club, Montreal, and the Toronto Railway Club.

Mr. J. H. Spicer, Assistant General Superintendent, Budgets, Canadian Pacific Railways, has been appointed Chief Budget Officer. He succeeds Mr. J. W. Grant, who has retired.

Mr. M. M. Zubair, Chief Engineer, North Western Railway, of Pakistan, who, as recorded in our August 1 issue, has retired, joined the Indian Railway Service of Engineers as probationer in 1927. In 1930 he was appointed Assistant Executive Engineer, North Western Railway. He subsequently held appointments as Divisional Personnel Officer; Additional Deputy Director (Establishment), Railway Board; Officer on Special Duty (A.R.P.), Railway Board; and Track Supply Officer. In 1937, Mr. Zubair became Executive Engineer and, in 1944, Divisional Engineer. He was confirmed in the senior scale in 1946. He was later appointed Acting Deputy General Manager (Personnel). In 1951, Mr. Zubair became Chief Engineer, Eastern Bengal Railway and, in 1952, Chief Engineer, North Western Railway. He is a past President of the Engineering Congress, West Pakistan, and a member of the Flood Control Commission.

Mr. M. M. Zubair
Chief Engineer, North Western Railway, Pakistan, 1952-58

Mr. B. A. Khan
Appointed Chief Engineer, of the North Western Railway, Pakistan

Mr. John D. M'Kelvey, Assistant Railway Operating Superintendent, Ulster Transport Authority, is retiring this month. Mr. Kelvey commenced his career with the Northern Counties Committee at Belfast in 1913. After serving in the 1914-18 war he was attached to the Manager's Office at York Road. In 1942 he was appointed Chief Traffic Controller (Operating) of the former Northern Counties Committee, L.M.S.R., and in 1949 became Assistant Railway Operating Superintendent, U.T.A.

Mr. A. B. B. Valentine, a member of the British Transport Commission, has accepted the office of President of the Railway Students' Association for the Golden Jubilee Session, 1958-59.

Mr. R. M. Henderson has been appointed Comptroller of Hotels, Canadian National Railways.

The British Transport Commission announces the following appointments:—

Manpower Adviser's Department

Mr. M. C. Thompson, Assistant Works Manager, Kirklees Limited, to be Work Study Assistant, Work Study Division.

Finance Department

Mr. J. Coward, Assistant Traffic Costing Officer, Costing Division, Glasgow, to be Traffic Costing Officer, Liverpool Street.

Mr. J. E. Dewdney, Assistant Traffic Costings Officer, Costing Division, Oxford Street, London, to be Traffic Costing Officer, Oxford Street, London.

Mr. E. Fletcher, Senior Assistant, Accounts & Statistics Division, to be Senior Budget Assistant.

British Railways Central Staff

Mr. J. W. Dickinson, Assistant (Revenue), Traffic Department, to be Assistant Freight Officer (General).

Mr. P. G. Wilks of the Dunlop Rubber Co. Ltd. has been elected Chairman of the Transport Committee, Federation of British Rubber & Allied Manufacturers in succession to Mr. G. W. Henderson of the North British Rubber Co. Ltd.

Mr. B. A. Khan who, as recorded in our August 1 issue, has been appointed Chief Engineer, North Western Railway of Pakistan, began his railway career with the Bengal-Assam system as an Assistant Engineer in 1933. He was promoted to be District Engineer in 1941 and from 1942 served as an Executive Engineer. He later became District Controller of Stores and, in 1948, Controller of Stores. In 1951, he was appointed Deputy Chief Engineer, Eastern Bengal Railway, and, in 1952, Deputy Chief Engineer, North Western Railway. Mr. Khan was appointed Chief Engineer of the Eastern Bengal Railway in 1957.

Mr. J. M. Smith, Chief Engineer Diesel Engine Division, the English Electric Co. Ltd., has been appointed Chief Designer, Armstrong Siddeley Motors Limited. He will be responsible for design and installation work relative to the Maybach engines.

General C. E. Salinas has been appointed President of the board of directors of the Argentine State Railways.

We regret to record the death, on September 16, of Mr. Frederick Eggar, Chairman of Freight Express Limited.

Mr. F. Marsden

Appointed Irish Traffic Officer, Euston, L.M. Region

Mr. Frank Marsden, Assistant Irish Traffic Superintendent, Euston, London Midland Region, British Railways, who, as recorded in our August 22 issue, has been appointed Irish Traffic Officer, Euston, began his railway service with the former North Staffordshire Railway at Stoke-on-Trent in 1917. After experience in the Commercial and Operating Departments in the Stoke, Leeds and Manchester Districts, he was transferred to the L.M.S. Divisional Superintendent's office at Crewe in 1934, as Headquarters Inspector. Four years later Mr. Marsden was appointed to the Modernisation Section at Euston and shortly after the outbreak of war became Railway Liaison Officer to the London Coal Control. In 1941 he was appointed L.M.S. representative for the inter-company freight rolling stock control. He became Assistant Docks Manager at Barrow in 1943, Assistant District Commercial Superintendent, Barrow, in 1946, and Shipping Traffic Superintendent, Belfast, early in 1950. In 1952, Mr. Marsden was appointed Acting Assistant Irish Traffic Superintendent (London Midland, Western and Scottish Regions) with headquarters at Euston. This position was confirmed in 1954.

Capt. R. L. Jordan has been appointed to the boards of three companies in the Metal Industries Group—Fawcett Preston & Co. Ltd., Brookhirst Switchgear Limited, and Farmer Brothers (Shifnal) Limited. Capt. Jordan was formerly Engineer Manager of the Royal Naval Dockyard, Chatham.

Mr. R. V. Hughes has been appointed to the Research Centre of Ruston & Hornsby Limited, and is responsible for the general administration and technical development programme for the complete range of diesel engines.

Mr. C. I. Rutherford has been appointed to the board of the Fibres Division of Imperial Chemical Industries, Limited. He has been Production Manager of the Division for two years.

Mr. C. Whitehouse has been appointed Foundry Superintendent, Summerson's Foundries Limited.

The following is an initial list of elections to the Institution of Locomotive Engineers:—

Members

Mr. M. J. Devereux, Assistant Chief Mechanical Engineer (Maintenance), Coras Iompair Eireann.

Mr. R. G. Jackson, General Manager, Jamaica Government Railway.

Mr. A. Wolff, Director & Alternate Chairman, Krauss-Maffei, South Africa (Pty.) Ltd.

Associate Members

Mr. J. Anderson, Draughtsman, North British Locomotive Co. Ltd.

Mr. H. Bickel, Mechanical Engineer, Swiss Industrial Company.

Mr. J. W. Bishop, District Assistant Traction Engineer, Perth, Western Australian Government Railway.

Mr. K. R. Brown, Rolling Stock Engineer, London Midland Region, British Railways.

Mr. S. N. Chatterjee, Divisional Mechanical Engineer (Locomotive), Asansol, Eastern Railway, India.

Mr. C. L. Gormley, Technical Assistant to Executive Officer, Production, London Midland Region, British Railways.

Mr. R. M. Hancock, Technical Assistant, Western Region, British Railways.

Mr. T. R. S. McKinlay, Project Engineer, North British Locomotive Co. Ltd.

Mr. E. Miller, Senior Draughtsman, Crewe, London Midland Region, British Railways.

Mr. A. H. J. Moody, Assistant Engineer, Crown Agents for Oversea Governments & Administrations.

Mr. F. Moulton, General Assistant to Works Manager, Locomotive Works, Chester Bridge, British Railways.

Mr. H. Preston, Progress Inspector, Locomotive Works, Chester Bridge, British Railways.

Mr. A. Sadler, Assistant to Works Manager (Training), Locomotive Works, Chester Bridge, British Railways.

Mr. N. Shelley, Leading Draughtsman, Derby, London Midland Region, British Railways.

Mr. J. Simnett, Section Leading Draughtsman, Brush Traction Limited.

Mr. F. A. J. Stanton, Erecting Shop Manager, Iraqi State Railways.

Associated Member—Reinstated

Mr. L. Abbott, Assistant District Motive Power Superintendent, Camden Depot, London Midland Region, British Railways.

Associates

Mr. C. E. Allen, Chief Traction Engineer, British Insulated Callenders Construction Co. Ltd.

Mr. K. Docksey, London Manager, F. H. Lloyd & Co. Ltd.

Mr. W. B. Hollingbery, Chemical Engineer & Administrator of Laboratories, Houseman & Thompson Limited.

Mr. G. W. Launder, Contract Engineer, Traction, British Insulated Callender's Construction Co. Ltd.

Mr. D. M. H. Rooney, Manager (Projects), Traction Contracts, British Insulated Callender's Construction Co. Ltd.

Mr. D. S. D. Williams, Editor of the *Oil Engine & Gas Turbine*.

The Telegraph Construction & Maintenance Co. Ltd. announce that Mr. H. F. Wilson has been appointed Managing Director of the Telcon Cables Group.

Mr. W. Eric Ward, Works Production Manager of the Consett Iron Co. Ltd., has been appointed a director and General Manager of the company.

The late Mr. F. C. Egerton

Formerly Traffic Manager, Buenos Ayres Great Southern and Buenos Ayres Western Railways

We regret to record the death of Mr. Frederick Charles Egerton, A.M.Inst.T., former Traffic Manager, Buenos Ayres Great Southern and Buenos Ayres Western Railways. Mr. Egerton was born in 1898 and was educated at Holt Secondary School, Liverpool, and King Edward VI Grammar School, Stafford. He joined the London & North Western Railway in 1915, and was posted to the Goods Department, Wolverhampton. In 1918 he volunteered for the Army, and served with the Royal Engineers (Railway Transport Division) until the following year, when he was demobilised, and returned to his previous post. In August, 1920, Mr. Egerton joined the Buenos Ayres Great Southern Railway, and six years later was appointed Acting District Traffic Superintendent in Las Flores, being later transferred to Neuquén in a similar capacity. In 1929 he was appointed District Goods Superintendent, Buenos Aires; in 1934, Assistant to the Chief of Operation; in 1935, District Passenger Superintendent, Buenos Aires; and in 1936, Chief Staff Assistant to the Chief of Operation and the Traffic Superintendent. Mr. Egerton was promoted to be Commerical Assistant to the Traffic Superintendent in 1937, and to Assistant Commercial Superintendent in 1939. In 1947 he was appointed Commercial Superintendent. He became Traffic Manager, Buenos Ayres Great Southern and Buenos Ayres Western Railways in 1948, which appointment he held for about two years.

Mr. T. M. Hopwood, Manager Traffic & Printing Department, the Bell Punch Co. Ltd., is retiring after over 35 years' service.

Mr. W. L. Baker, Manager of the Metal Finishing Division of the Pyrene Co. Ltd., has retired; he will be succeeded by Mr. H. A. Holden.

Mr. G. W. Kelland has been appointed Public Relations Officer of the Birfield Group of Companies.

Mr. W. E. Dodsworth has been appointed a director of Park Royal Vehicles Limited.

NEW EQUIPMENT AND PROCESSES

Small Low-Voltage Soldering Iron

THE Brownleco low-voltage pencil soldering iron appears to have application for railway signalling and electronic departments.

The instrument weighs 1½ oz., has a barrel dia. $\frac{5}{16}$ in. and an overall length of 8 in. The element is wound on to an insulated copper alloy bit holder, designed to act as a heat storer, into which various sizes of copper bits can be fitted. This design gives good conductivity to the working tip and takes approximately 2 min. to heat up.

The standard voltage is 6 or 12 but the elements can be wound specially up to 50 V. The irons are suitable for working from a battery or a double-wound transformer. The instrument is supplied fitted with a standard ¼-in. bit, two yd. of flex and suitable for 6 or 12 V. supply.

The price of the soldering iron is 19s. 6d. It is manufactured by Browning's Electric Co. Ltd., Green Street, London, E.13.

Capstan Lathe

A CAPSTAN lathe with a 1¼-in. bar capacity is now available. With the trade name New Hobrough, the machine is stated to be designed to give the same accuracy and rate of production as any equivalent model of more expensive make.

The machine is claimed to be suitable for steel work while, at the same time, the speed ranges allow it to be used as a brass finishing machine. Speed range is from 100 to 3,000 r.p.m. and the machine is designed to accept other manufacturers' turret equipment, thus enabling it to be placed in the same production line as other makes.

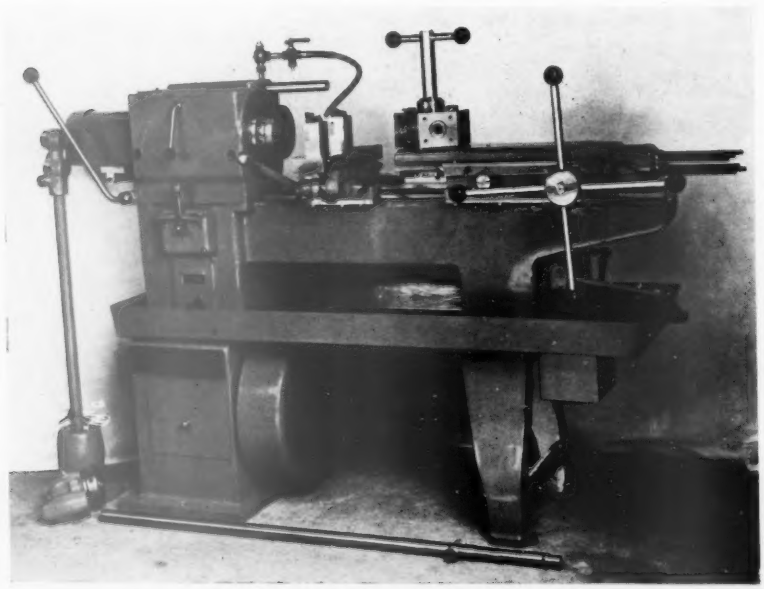
It is suitable for both bar and chucking work, and when used with a chuck fitted will accept 1½-in. short bar through the spindle. A feature of this machine is that the speed ranges allow as many as 12 reverses to be obtained on the spindle in one min.

The lathe is available in four basic versions, in all cases motorised for 400-V. three-phase, 50-cycle supplies:—No. 1, chucking work only with four speeds and front and rear tool posts; No. 2, chucking work only with eight speeds and front and rear tool posts; No. 3, with collect mechanism, set of collets for ¼-1¼ dia. in ⅛-in. steps, 8 speeds; No. 4, as for No. 3 but fitted with motorised suds pump and all fittings.

Leading particulars of the lathe include: Height of centres, 6½ in.; max. dia. swing over bed, 13 in.; max. distance between toolposts, 8½ in.; size of tools, 8½ in.; max. work length between collet and capstan, 23 in.; max. stroke of capstan, 7 in. The weight of the machine is 18 cwt. and floor space required with bar feed fitted is 10 ft. × 3 ft.

Power feed to the turret and screw feed to the cross slide facilities can be arranged at extra cost. Chucks can also be supplied to suit customers' requirements.

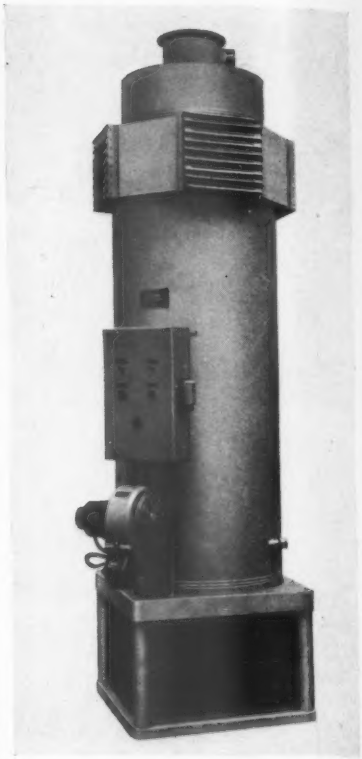
Further particulars of the capstan lathe may be obtained from the manufacturer, Philip de Havilland Machine Co. Ltd., 64-66, Grosvenor Street, Portsmouth, Hampshire.



Industrial Space Heater

THE oil-fired Beacon air heater is designed for space heating in workshops, warehouses, and similar industrial premises. The unit is entirely self-contained, and obviates the need of steam supplies and the necessary water piping. Maintenance costs are minimised by the fitting of an axial-flow fan and radial diffuser which gives the good results from low power consumption. Thermal efficiencies as high as 87 per cent. are claimed.

Power is provided by a 2-h.p. motor. Grades of fuel oil can be used up to a viscosity of 40 sec. Redwood No. 1, the output of this heater is 595,000 B.T.U. per hr. Its warm air displacement is 320,000 cu. ft. per hr.; from louvred outlets warm air is exuded at 15 ft. per sec. The rise in temperature through the machine is 122 deg. F.



The machine incorporates a spiral tube "bundle" through which the combustion gases pass from the combustion chamber to the flue. This gives a large heating surface and also produces turbulence in the air passing over the tube bundle, thus achieving a high degree of heat transfer. A baffle fitted half-way along the tube "bundle" causes the air to be forced between the tubes for a form of re-heating before reaching the outlets.

The design of the heater and direction of air is such that the outer shell of the unit is always cool. Adjustable louvres fitted to each warm air outlet enable the direction of air flow to be varied according to requirements.

The Beacon heater weighs some 12 cwt.; it is automatically controlled for economy and is fitted with a number of safety devices. These include an electronic protection unit which comes into operation immediately upon flame failure. Until the locking switch is re-set, the burner cannot be re-started.

By an adjustable time relay, operation of the fan is delayed until sufficient internal heat has been generated. Floor space required is 9 sq. ft. It is erected in the perpendicular position and has an overall height, excluding flue pipe, of 11 ft. 3 in.

The heater is £680 net, ex works, and delivery ex stock. Further details may be obtained from the manufacturer, John Thompson Beacon Windows Limited, Wolverhampton.

Spot Welding Machine

A VERSION of the manufacturer's S.F.15 foot-operated spot welder has been produced, with a working throat depth of 30 in. and an electrode stroke infinitely adjustable to a maximum gap of 4 in. Alternative machines with 12 in. and 24 in. throat depths have also been developed.

A top screw on the pedal bracket gives instantaneous stroke adjustment without having to open the covers. The foot pedal is radially adjustable and the normal height above the floor irrespective of electrode stroke or pressure set is less than 11 in., stated to allow a comfortable working position.

The electrodes are water-cooled and machined to $\frac{1}{2}$ in. dia. B.S.807 taper. The control circuit is operated by a Sciaky Electronic Thyratron timer giving weld times from 3-150 cycles.

The welding capacity of the machine is 14 + 14 s.w.g. mild steel sheet and greater unequal thicknesses, for example, mild steel wire $\frac{5}{16}$ in. + 18 s.w.g., up to 0.250 in. + 0.250 in. dia.

Full details of the S.F.15 spot welder may be obtained from the manufacturer, Sciaky Electric Welding Machines Limited, Slough, Bucks.

Portable Cable Tester

A CABLE test set has been developed which provides, in a portable form, facilities for checking the continuity and insulation of multi-core cable looms previously available only in fixed or cumbersome equipment. The unit is of particular value in any type of installation where cabling is already in place, or where the cable runs are in confined spaces, and its applications appear to include railway signalling installations, and control circuits on diesel and electric locomotives and m.u. stock.

Checks for either continuity or inslattion may be carried out from one end of a cable run; the far end is terminated by a small unit weighing less than $\frac{1}{2}$ lb. A test is initiated by a press button and the instrument automatically selects each wire in turn. The identification of the core undergoing test is indicated in a window which is illuminated by a red light if failure occurs; in this case the selector stops at the faulty core.

A single outlet from the test set can be adapted for use with any cable by means of a suitable coupler supplied against the customer's requirements. To enable long cable runs to be tested in conditions where the termination unit is more conveniently attached by a second operator, an intercommunication amplifier is incorporated in the instrument, connection being made via the cable under test. Standard service style headsets may be used. In its portable form the tester is mounted on a strap which can conveniently be used either as a neck sling or a carrying handle. Power is supplied by a light-weight battery of sufficient capacity for about 16 hr. of normal use. Couplers and termination units can be carried in pouch-belts.

A charging unit can be supplied which can be incorporated in the transit case used to carry the test set and its accessories, overcharging being prevented. An a.c. power unit is available as a replacement for the battery when the test case is in use on the bench or near a mains supply.

The size of the unit is 11 in. × 6 in. × 8½ in. and it weighs 19 lb. Speed of operation is as follows:—on continuity, five conductors per sec.; on insulation, one conductor every 30, 15 or 6 sec. as required; insulation test voltage is 500 V. d.c. The connector capacity is up to 25 ways per test. Larger cables can be accommodated, if required, by use of extra adaptors.

Full details of the tester may be obtained from the manufacturer, De Havilland Propellers Limited, Hatfield, Herts.

Veneered Boarding

A RANGE of veneered board-type products, known generally as E.P.C. Board, is announced. The manufacturer has experience of veneered blockboard and ply, metal-faced plywood and so on for railways and other industries and also recently developed a plastic laminate known as A.V. Plastic.

E.P.C. Board is manufactured by veneering chipboard (particle board), and hardboard, in various types of constructional and/or decorative wood veneer or A.V. Plastic. It is available in both standard sizes and cut to size; from one to four edges can be veneered. Applications for railways are interior surfaces of passenger coaches and buffet cars, coach partitioning, shelving and so on.

The material can be worked like natural wood, and the thermal insulation is approximately equal to natural wood. It is more consistent and dimensionally stable, being without knots, shakes, splits or the other defects which occur in natural timber, and the main advantage is that it is available in greater widths and various thicknesses and requires no planing or other preparation before use.

In the case of A.V. Plastic veneered types, no polishing or other treatment is necessary, the product in its standard form being suitable as a constructional material without any further attention. It is also stated to be more resistant to vermin and fungi than natural timber.

Standard sized boards are supplied unedged in wood veneer 96 in. × 48 in., 84 in. × 48 in., and 72 in. × 48 in., in ½ in., ⅝ in. and ¾ in. thicknesses and in plastic covered finishes 84 in. × 48 in. and 72 in. × 48 in. in ½ in., ⅝ in. and ¾ in. Plastic on ¼ in. hardboard is also offered in board sizes 84 in. × 48 in.; laminates are similarly supplied at 84 in. × 48 in.

The product is available in a wide range of wood veneers, decorative and constructional, and plastic veneers in a variety of colours besides combinations of wood and plastic veneer. Special sizes and finished veneered to specialised customer requirements can also be supplied.

Full details of E.P.C. Board may be obtained from the manufacturer, Edmonton Panel Co. Ltd., Upper Edmonton, London, N.18.

Flexible Pipe Coupling

SUITABLE for fuel, hydraulic, pneumatic and lubrication systems, and other installations subject to vibration, Acflex pipe couplings may be applied to convert rigid tubes into flexible assemblies. They will accommodate tube misalignment up to $\frac{1}{16}$ in., tube separation up to ¼ in. and allow ± 4 deg. tube flexing.

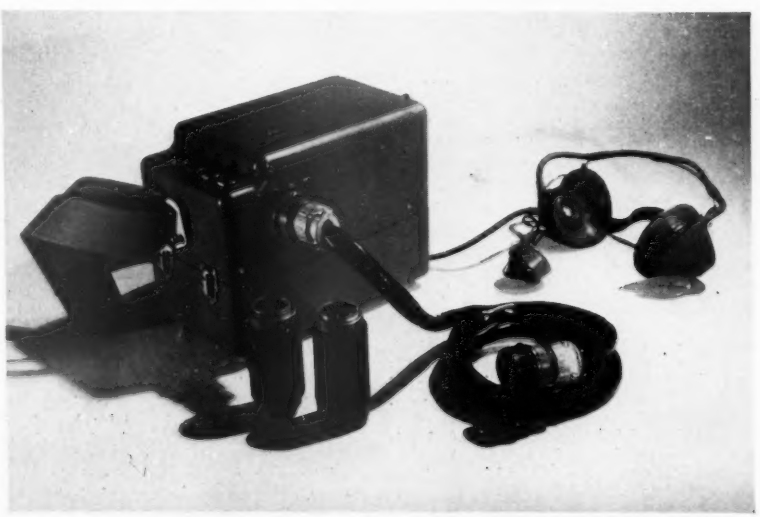
The couplings eliminate the need for metal bellows in pipe runs and, as they can be installed after tubes are placed, the structural apertures need be no larger than the standard bead on the tube. An axial movement of 0·35 in. is permissible, and the couplings can thus function as slip joints.

Little more than hand tightening is required, it is stated, to achieve pressure tightness over a large temperature range. Working pressure range is from −11 to +125 lb. per sq. in.; proof and bursting pressures are 250 and 375 lb. per sq. in. Temperature range of the units is − 50 to + 70° C.

The Acflex coupling incorporates design features which have been tested widely and used on aircraft.

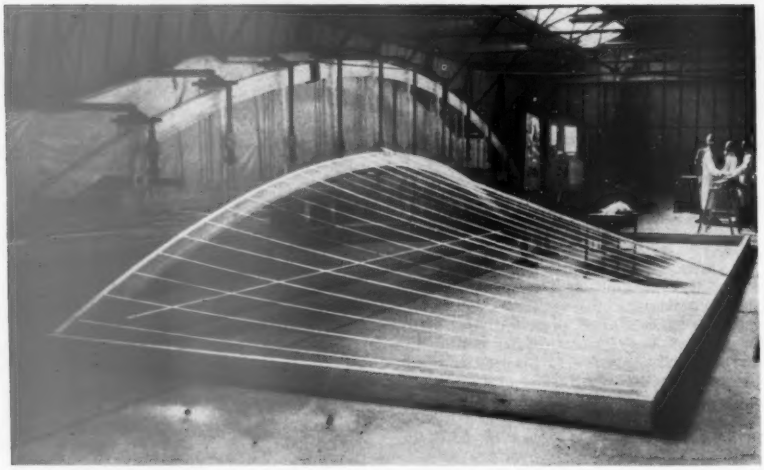
A full range of standard, boss, termination, bulkhead, tee-pipe and 90-deg. elbow pipe couplings, with screwed spigots and pipe beads, is available to accommodate tubes with outside diameters of ¼-3 in. × ¼ in. increments and of 3½, 4 and 5 in. A second range to suit tubes with outside diameters of ¼, $\frac{5}{16}$, ⅜, ½ and ⅝ in. is also available.

Delivery is ex-stock in most cases. Further details may be obtained from Aero Controls Limited, Industrial Estate, Weedon Road, Northampton.



Timber Development Association Limited Open Day

Demonstration of work at the T.D.A. research laboratories



Model of conoid shell roof under construction in the Timber Development Association mechanical laboratory ; the paper stringers represent the roof covering

The Research & Development Committee of the Timber Development Association Limited held an open day at its laboratories at Tylers Green, Buckinghamshire, on September 18.

The aim of the Association's work at Tylers Green is to conduct investigations into the scientific properties and uses of wood, with the emphasis on applied research such as structural engineering in timber, methods of testing, and preservation. The T.D.A. works in close collaboration with the Forest Products Research Laboratory at Princes Risborough, and co-operation is also maintained with other interested Government research stations and research associations.

On a tour of inspection of the laboratories the work of the different departments was demonstrated in various exhibits. In the biological laboratory the results of tests on samples of seven timber species installed in the North Thames Gas Board cooling tower at Southall for four years showed their relative resistance to deterioration in an environment of fumes and humidity; X-ray photographs showed the extent of damage caused by marine boring insects in timber used for marine engineering, as in timber piers and viaducts.

The progress of tests being carried out in London where 39 different finishes have been applied to patches of oak block flooring was demonstrated in the chemical laboratory. In each case the original colour of the wood had changed with the effect of light.

Mechanical Testing Laboratory

In the mechanical testing laboratory a 68-ft. span glued laminated tied arch was shown on test in the main test bed. The rise of the arch was 8 ft. and a 4-in. camber had been incorporated in the tie. The arch was built of western hemlock and a resorcinol adhesive used throughout. Its behaviour is being investigated under uniformly distributed loads, asymmetrical loads, and point loads. (An illustrated article on the use of laminated timber in roof construction, at Preston Station, was published in our issue of September 20, 1957.)

A 75-ft. bed has been prepared in the laboratory for the fabrication of a curved arch for the conoid roof of a new laboratory to be built at Tylers Green. This laminating bed enables multi-packing to be undertaken.

Shell Roofs

Part of the T.D.A. programme on large span roofs for industry is concerned with the development of timber shell roofs. Three forms of shell are being considered; cylindrical, hyperbolic paraboloid, and conoid.

Although the first concrete conoid shell was constructed more than 20 years ago, very little attention has been given to the design of such shells nor has much experimental work been carried out. The design has, however, been chosen for the reconstruction of Oxford Road Station, Manchester, London Midland Region, British Railways. The work is expected to start in December of this year.

A model of a conoid shell measuring 34 ft. × 12 ft. on plan with a rise of 4 ft. to the highest point is under construction in the laboratory for the pupose of showing what actual problems of design are rather than to check any existing theory.

Proving Ground

On the proving ground, an open-air compound, various forms of roof covering are being investigated to find a waterproof durable covering which does not increase the fire hazard. At present several types of plastic are being considered in the form of sheets and strayed-on coatings. A small hyperbolic paraboloid roof has been covered with P.V.C. sheeting. This will remain exposed to the weather to see whether the adhesive used and the sheeting itself is sufficiently durable to prevent it from lifting.

After the tour of inspection Mr. G. B. Crow, Chairman of the Timber Development Association, spoke of the advantages of timber in structural engineering. The T.D.A. roof truss designed by Mr. P. O. Reece, he stated, had regained nearly all the domestic market which had adopted steel because of the post-war shortage of timber. Although the use of timber was restricted by local bye-laws, Mr. Crow pointed out that laminated timber will resist failure in the event of fire for about 2 hr. whereas steel would probably fail in 15 min. Shell roofs, he stated, can be produced at half or two-thirds the cost of conventional building. Some £80,000,000 was spent last year on industrial roofs; if £20,000,000 can be saved for a research expenditure of £150,000 the T.D.A. would be making a great contribution to reducing building costs.

New Construction in China

The 700-mile line in N.W. China, running from Lanchow north-eastwards to Paotao, the new steel centre near the Mongolian border, was completed ready for traffic in August. This railway has three bridges over the Yellow River, each of which is of very large size.

Western Line

The great Western line which crosses China from east to west between the Yangtse and Yellow Rivers and which passes through Lanchow, 1,370 miles from the sea, has now entered Sinkiang Province and has reached the banks of the Hungliu River, at a point 1,000 miles west of Lanchow. Tracklaying is proceeding on a branch line to Hami, 110 miles, while the bridge is being built.

Construction has started of a new railway running west from Lanchow. The first section will be to Sining, 220 miles, of which 110 miles has been completed, but the whole line will be 750 miles long and will terminate at Lenghu, in the Tsaidam river valley. This line will later be extended into Tibet.

S.W. China

Work is proceeding on two sections of the Hunan-Kweichow-Yunnan Railway in the south-west. When completed this line will form the final section of a second great east-west railway, from Shanghai to Yunnan, about 1,500 miles.

Surveys of alternative routes from Chungking to Kunming show that the route from Neikiang, on the Chungking-Chengtu line, through Ipin and Yentsing is the best, and construction has begun. The line is complete from Heikiang to the bank of the Min river opposite Ipin, and the bridge is under construction, while the road bed on the south side of the river is also being built.

Besides the line from Chungking to Kunming, a parallel line from Chungking itself to Kweiyang has been decided upon. It will be 200 miles long, and built through difficult country; it will include a bridge over the Upper Yangtse near Chungking. A tunnel through the Loushan mountains, 7,000 ft. long, has been completed.

Motive Power and Rolling Stock

The Szufang locomotive and rolling stock plant at Tsingtao has turned out a new class of 4-8-4 passenger locomotive, with an indicated h.p. of 1,880.

The Dairen locomotive works is building an experimental diesel-electric locomotive powered by two 2,000-h.p. engines and consisting of twin units.

VICKERS LIMITED INTERIM DIVIDEND.—The interim dividend on the ordinary stock of Vickers Limited is 2½ per cent, to be paid on October 21. In the first six months of 1958, sales amounted to £93,400,000.

Curtailment of Little-Used L.T.E. Underground Facilities

Two short branches and a station to close as economy measure; cuts in early morning and late night trains

Because of the need for economies to help meet higher costs, London Transport last week announced plans to cut certain lightly-used services on the Underground. These are: closure of the two short branches from Holborn to Aldwych on the Piccadilly Line and from Acton Town to South Acton on the District Line; closure of Mornington Crescent Station on the Northern Line; cuts in early morning and late night services and the closing of six stations on Sundays.

Aldwych Branch

The two-car shuttle service on the 600-yd. Holborn to Aldwych branch, which runs directly beneath Kingsway, was reduced to rush-hours only earlier this year because of the small amount of traffic and even before that Aldwych carried the fewest passengers of any Central area station; it is already closed on Sundays. Between Holborn and Aldwych seven parallel bus services along Kingsway cover the same route and providing 75 buses an hour in each direction at peak periods.

South Acton Branch

The branch from Acton Town, two-thirds-of-a-mile long, serves only South Acton Station, which has the smallest number of passengers of any Underground station, except a handful in outer rural areas where distances are much greater and the railway is essential to the life of the local community. At present there is a one-car shuttle service on weekdays running every 7½ min. at peak hours and every 10 min. at other times, connecting with the District and Piccadilly lines at Acton Town and with the British Railways London Midland Region electrified line from Broad Street to Richmond at South Acton. The branch is already closed on Sundays. Chiswick Park District Line Station is about half-a-mile by road from South Acton Station, and there are ample bus services in the area, including those serving Acton Town and Turnham Green Stations.

Mornington Crescent

Morning Crescent Station, situated about half-way between Camden Town and Euston Stations on the Northern Line, is little used for an inner London station and there will be fewer passengers still when the adjacent Carreras Tobacco Factory moves to Basildon. The station is, at present, served by only half of the Northern Line trains. Users of the station will be within 5 or 10 min. walk of other Northern Line stations at Camden Town, Euston or Warren Street, which are only about half-a-mile away by road, and intensive bus and trolleybus services link all these points. The distance between stations resulting from the closing of Mornington Crescent would still be considerably less than that of several comparable sections of other lines in the central area of London, as from Waterloo to Kennington and from Liverpool Street to Bethnal Green.

The proposals to close the Aldwych and South Acton branches and Mornington Crescent Station are being submitted to the London Area Transport Users' Consultative Committee.

Train Service Reductions

Economies are also to be secured by starting Underground services half-an-hour later in the morning than at present, with last trains at night finishing about half-an-hour earlier. First trains will arrive in the central area at about 6.15 instead of 5.45 a.m., and last trains leave about midnight instead of 12.30 a.m. Less than one-half of one per cent of all passengers use these very early and late trains, and the change will mean a considerable economy in operating costs. The new times will take effect next February.

Sunday Closing of Stations

Six stations which carry little Sunday traffic will be closed on Sundays only from October 5: Chancery Lane, Essex Road, Fairlop, Shadwell, Temple, and Shoreditch. The last-named is now open in the mornings only on Sundays. Other rail and road services are available in all cases.

New Staff Association Institute at Bristol

A new Institute and Club for the Bristol Branch of British Railways Staff Association at Temple Meads Station was opened on September 18 by Mr. K. W. C. Grand, General Manager of the Western Region. The Lord Mayor of Bristol, Alderman F. G. W. Chamberlain, was also present, with Alderman F. A. Parish and Mr. P. T. Heady, Members of the Western Area Board of the B.T.C. Mr. Leslie Edwards, District Operating Superintendent and President of the Bristol Branch, presided, supported by Mr. J. W. Reynolds (Chairman) and other Branch officials.

Others present at the ceremony were:—

Messrs. C. H. Pearce, Principal Contractor; S. G. Ward, Regional Establishment & Staff Officer; H. R. Chubb, Regional Welfare Officer; H. E. B. Cavanagh, Regional Architect; C. J. Rider, Regional Public Relations & Publicity Officer; A. L. Carr, General Secretary, Western Region Staff Association; H. E. R. Bastin, District Commercial Manager; H. G. Lakeman, District Engineer; D. C. I. Reynolds, District Running & Maintenance Officer; C. R. Rust, Stationmaster, Temple Meads; P. C. Kirwin, Goods Agent; and S. Cole, Shedmaster.

The Bristol Branch of the Association is one of the largest and most active on British Railways, with over 2,000 members. Its activities cover a wide range of athletic, educational and recreational interests, such as football, tennis, billiards, drama, and folk dancing. There is also a flourishing veteran section for retired members of the staff.

The building has been erected by C. H. Pearce & Sons Ltd., of Westbury-on-Trym, under the direction of Mr. H. E. B. Cavanagh. The interior is of contemporary design with furniture and lighting to match. It includes a television lounge, four skittle alleys, rooms for cards, darts, billiards and table tennis, a dark room for photography, a bar, and a canteen, with a stage for dramatic productions and a floor suitable for dancing.

L.M. Region Goods Services in Manchester

To achieve improved rail transits and more efficient collection and delivery of goods in the Manchester district, British Railways, London Midland Region, is to convert the goods stations at Ancoats and Ardwick East into one-way depots, handling outwards and inwards traffic respectively. The conversion work which has begun, will mark the first stage in the re-organisation of goods handling in the Manchester area.

At present the Ancoats depot (of the former Midland Railway) and the Ardwick East depot (of the former Great Central Railway) function independently, handling both forward and received traffic. Under the new arrangements which have been pre pared in consultation with the staff, Ancoats will become a forwarding depot and Ardwick East a receiving depot. Both will deal primarily with sundries traffic and certain full loads.

The co-ordination plan, in addition to the re-organisation of staff, will involve certain structural work and the installation of new equipment. The contractors for the work are R. G. Horton (Engineers) Limited, of Brierley Hill.

At Ancoats the large goods shed will be extended so that all loading of forwarded sundries traffic can take place under cover, and the deck and small goods shed will be displaced. Road vehicle parking areas and

(Left to right) Mr. F. A. Parish; Mr. W. Haynes, Member of Committee; Mr. P. T. Heady, Mr. C. R. Chard, Member of Committee; the Lord Mayor; Mr. H. A. Webster, Secretary; Mr. K. W. C. Grand; Mr. Leslie Edwards; Mr. E. E. Woolway, Vice-Chairman

three new traffic operating sidings are to be constructed and a mobile crane provided.

Vacuum Brake Testing Equipment

Among the equipment at Ancoats will be plant for the testing of the vacuum brakes with which an increasing number of wagons for express freight trains are being fitted.

At Ardwick East the new installations include additional sidings, capstans and fairleads and a through goods connection to Ancoats at Ashburys Junction. Provision will also be made for additional road vehicle parking areas, new electric platform trucks, and charging plant and a new petrol installation for road cartage motors.

In addition, the Ancoats branch line is to have its siding accommodation increased by five new double-ended sidings.

Inspection of Civil Engineering Works in the Western Region

Mr. K. W. C. Grand, General Manager, British Railways, Western Region, accompanied by Mr. M. G. R. Smith, Chief Civil Engineer; Mr. E. C. Cookson, Assistant Civil Engineer; and Mr. H. Savage, Assistant Civil Engineer (Modernisation), recently carried out a tour of civil engineering modernisation works in progress in the Region.

The tour covered the Banbury, Birmingham, Gloucester, South Wales, Bristol, and Swindon areas. It included inspections of many of the new maintenance and fuelling depots for diesels, and major maintenance works such as the reconstruction of a bridge over the Severn, with viaduct approaches, at Gloucester.

New Yard at Margam

A visit was also made to the new marshalling yard now under construction at Port Talbot (Margam), the subject of an illustrated article in our June 20 issue; and to the site of the new Swansea East Side Road, which necessitates several new under- and over-bridges.

The accompanying illustration is reproduced from a photograph taken at the foot of the new control tower at Margam.

Storm Damage in the Eastern Region of British Railways

The severe storm which affected parts of South East England on September 5, caused dislocation to rail services on the Eastern Region of British Railways. The portions of line affected were the London, Tilbury and Southend Line in its entirety, and the Great Eastern Line from Liverpool Street to Chelmsford, including the Southend Branch.

There were 10 trains on the L.T.&S. line en route which were brought to a halt at stations and held there until adequate linking road services could be provided. In many stations water rose to platform level and at some stations the lighting failed.

Army vehicles were obtained to clear 300 passengers from a train which was stranded at Laindon and later used to run a shuttle road lift between Pitsea and Upminster. In addition buses were obtained from all available local sources. In all some 4,000 passengers were conveyed by road to linking train services and were able to complete their journey before morning.

The lines to Tilbury and between Ockendon and Upminster were restored to traffic early Saturday afternoon.

The Upminster-Laindon portion of the line was restored to traffic on Saturday morning and that between Pitsea and Stanford early on Saturday afternoon. A few hours later the Ockendon branch was opened.

Great Eastern Line

There was slight flooding at Clapton and Seven Kings on the Great Eastern line, but the worst interference to services was at Brentwood and New Hall, near Chelmsford.

At Brentwood the line was flooded and at New Hall, there was a landslip which at first closed only the down line but later caused both lines to be blocked. The result of these incidents combined was that for long periods of the night of September 5-6 trains could not get beyond Chelmsford or up to Chelmsford as the case might be nor could they at times pass Brentwood in either direction.

At Brentwood, the up electric and down main were restored at 12.30 a.m. and 12.50 a.m. respectively and the other two tracks, down electric and up main, at 6.30 a.m. The landslip at New Hall was cleared, with the aid of soldiers from Chelmsford barracks, by about 9.30 a.m. on the same morning. By about 10 a.m. all G.E. suburban services were running more or less normally but the main line trains on the Norwich line continued to be subject to delay throughout Saturday.

Staff and Labour Matters

Railway Pay Review

A meeting took place on September 23 between representatives of the British Transport Commission and representatives of the three railway trade unions to discuss the arrangements for setting up the proposed independent inquiry into railway pay.

It is understood that agreement has not yet been reached in connection with the terms of reference of the independent body. At a subsequent meeting of the N.U.R., the feeling was expressed that the committee of inquiry should be empowered to make recommendations as well as to establish facts. A further meeting between the parties will take place on October 14, when it is hoped to finalise the matter. The unions have asked that Sir Brian Robertson, Chairman of the Commission, should be present at the meeting.

Provincial Busmen's Wages

On September 16, provincial bus employers addressed a letter to the Industrial Disputes Tribunal. This rejected the date (October 10) suggested by the Tribunal for the hearing of the provincial busmen's wage demand for 14s. 6d. weekly increase. An alternative date early next month was suggested.

Engineering Unions' Demands

On September 17, after the management board of the Engineering & Allied Employers' National Federation had considered a request for a further meeting from the Confederation of Shipbuilding & Engineering Unions, it was decided that negotiations on the engineering unions' demands for a 6 per cent increase would be resumed on October 2.

Chief Officers of the Region at Margam yard: (left to right): Messrs. M. A. Henry, Resident Engineer; R. T. Jones, Assistant District Engineer, Neath; H. Savage, Assistant Civil Engineer (Modernisation); E. C. Cookson, Assistant Civil Engineer; K. W. C. Grand, General Manager, and M. G. R. Smith, Chief Civil Engineer

LORRY COLLIDES WITH LOCOMOTIVE HAULING AMMUNITION TRAIN.—A three-ton military lorry and a locomotive hauling an ammunition train on the camp railway collided on an unfenced level crossing at Marlborough Farm Camp, a Command Ordnance depot between Banbury and Warwick, last Tuesday. Six soldiers were reported killed and eight soldiers and civilians, including the engine driver, injured.

Contracts and Tenders

Rolling stock for the Nigerian Railway Corporation

Gloucester Railway Carriage & Wagon Co. Ltd., has received on order from the Crown Agents for the following rolling stock for the Nigerian Railway Corporation:

80 35-ton bogie high-sided wagons, type "ZGX"
85 35-ton steel-bodied bogie covered goods wagons, type "PXG"
8 bogie goods brake vans, type "B.V.O."
110 25-ton type "DG" low-sided open wagon underframes and steel bodies, less bogies
42 30-ton steel covered goods wagon bodies, type "HVG."

The Canadian Car Co. Ltd., of Montreal, has received an order from Canadian National Railways for 125 double-deck motorcar transporter wagons at a cost of $2,600,000. They will be similar in design to the 25 placed in service 18 months ago. Fifty of the wagons will have a carrying capacity of eight Canadian-built motorcars or 10 European size cars. The remaining 75 will be of similar design to carry six large or eight small cars.

The Vacuum Brake Co. Ltd., a member of the Birfield group of industries, has received a contract from Metalexport, Poland, for the supply of vacuum brake equipment for rolling stock which the latter is manufacturing for the Indian and Mozambique Railways. The stock consists of 30 "WP" class locomotives and tenders, and 650 bogie carriages for the Indian Government Railways, and 390 40- and 45-ton goods wagons for the Mozambique Railways. The value of the order to the Vacuum Brake Co. Ltd. is some £120,000.

British Railways, North Eastern Region, has placed the following contracts:—

Chippindale (Engrs.) Limited, Leeds: four 1-cu. yd. capacity "Orion" dumpers

W. E. Hargrave Limited, York: heating installation, York Permanent Way Shops.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From India:

1,930 lock bars, three section, complete with all parts
5,862 lock bar clips inside, 90 lb.
306 lock bar clips, inside, 50 lb.
2,304 lock bar clips, inside, 60 lb.
300 lock bar clips, outside, 90 lb.
1,350 lock bars, roller path B.G. 8 in. stroke, 90 lb., complete with all parts
1,900 lock bar driving attachments with rivets.

The issuing authority is the Director-General of Supplies & Disposals. The tender No. is WP2/4446/18/D/C.L.B. Bids should be sent to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is October 7, 1958. The Board of Trade deference is ESB/22864/58.

From Burma:

50 ft. of brake lining, 3½ in. × $\frac{5}{16}$ in.
10 lengths of boiler tube, OD., 3¼ in. × 18 ft. lengths
4 steam pressure gauges, 320 lb. × 12 in. dia.

The issuing authority and address to which bids should be sent is the Director General, Union of Burma Purchase Board, St. John Road, Rangoon. The tender No. is III A/387/P & M of 57-58. The closing date is October 6, 1958. The Board of Trade reference is ESB/23211/58.

From Iran:

5,300 items of various materials for doors and windows, such as locks, handles, and so on.

The issuing authority is the Iranian State Railways Administration. Tender documents can be obtained from the Section des Adjudications et des Contrats, l'Administration des Chemins de Fer de l'Etat, Tehran. A deposit of 21,000 rials is required. The closing date is October 6, 1958. The Board of Trade reference is ESB/22934/58.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

To facilitate the export of 2,000,000 tons of iron ore a year from India to Japan, the Government of India proposes to improve and extend the railway system from Sambalpur to Titilagarh, develop the port and railway facilities at Vizagapatam, and develop the iron ore mines at or near Kiriburu in the Rourkela area. The developments at Vizagapatam will include the installation of railway yards, signals and communications, a wagon haulage system, a rotary wagon dumper, loading towers, conveyors, shovels, and so on. The total cost is estimated at some £24,000,000. No calls for tender have yet been issued.

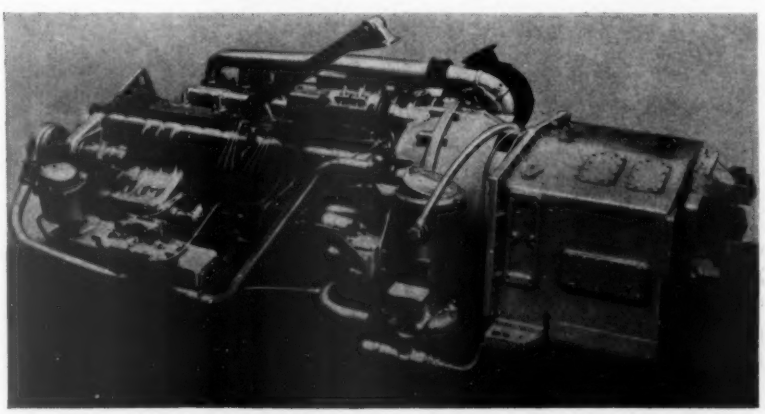
The Special Register Information Service, Export Services Branch, Board of Trade, reports that the closing date of the call for tenders from Sudan for signalling equipment, reported on page 261 of our August 29 issue, has been postponed to October 15.

Notes and News

Baltic Train Ferry Launched.—The 7,000-ton train ferry *Sassnitz*, which is to ply between Sassnitz, in Rügen, and Trelleborg, in Sweden, was launched recently. The ferry service is operated jointly by the State Railway (of the German Democratic Republic) and the Swedish State Railways.

Pressed Steel Co. Ltd. Brussels Office.—The Pressed Steel Co. Ltd. celebrated the official opening of its new offices and showroom in the Galerie Ravenstein, Brussels, on September 16. The new premises were declared open by Monsieur Longerstaey, Chef du Cabinet to the Belgian Minister for External Trade. Mr. J. R. Edwards, Managing Director of the firm, stated at the opening ceremony that "A vast proposal like the establishment of an area of free trade ultimately embracing all countries of the European Continent is not just another 'trade treaty'; it is an act of history—an act that one day may well lead to the creation of the United States of Europe." The company, he added, was convinced that its car body and railway wagon divisions could play a much increased role in its European activities, and the opening of these premises in Brussels was evidence of this conviction.

B.U.T. Exhibits at Commercial Motor Show.—Equipment for railcars is among the British United Traction Limited products on show at the Commercial Motor Show to be held at Earls Court, London, which opens today (Friday) until October 4. The exhibits are two horizontal engines and transmission sets. One of the engines is a B.U.T. 15-litre turbo-charged six-cylinder diesel with a unit-assembled Self Changing Gears RRK2 hydro-mechanical transmission pack which incorporates reversing gears and automatically controlled change speed gears. This is shown in association with the Serck-Behr radiator with hydrostatic fan drive and temperature control. The capacity of the engine is 926 cu. in., the bore being 5½ in. and the stroke 6½ in., and it produces a maximum torque of 867 lb.-ft. at 1,250 r.p.m. A B.U.T. 18-litre normally



B.U.T. 15-litre turbo-charged diesel engine with unit-assembled S.C.G. RRK2 hydro-mechanical transmission unit

aspirated six-cylinder diesel engine, with a unit-assembled Self Changing Gears 18 DF Schneider single-stage torque converter, forms the other railcar exhibit. Its capacity is 1,083 cu. in., the bore and stroke each being of 6¼ in. Maximum torque is 890 lb. ft. at 1,300 r.p.m.

Increase of Sub-normal Season Ticket Rates, Eastern Region.—Sub-normal season ticket rates from a number of stations on the Eastern Region of British Railways are to be increased on October 1. The rates effected are from stations on non-London lines and in many cases to stations in the London Transport area. These increases are being effected under existing authorisation and have no connection with the recent application by the British Transport Commission to raise the maximum level of fares.

Four Eastern Region Stations to be Closed to Passenger Traffic.—British Railways Eastern Region, announces that from October 6 the passenger service will be withdrawn from Rossington, Bawtry, Ranskill, and Crow Park stations, all four on the Great Northern main line between Newark and Doncaster. Passengers will be catered for at Doncaster, Retford, or Newark and by bus services in the area. Parcels traffic will be dealt with at Doncaster, Retford, or Newark, from which point C. & D. services will operate. Rossington, Ranskill and Bawtry will continue to deal with goods traffic, but Crow Park will be converted to an unattended goods delivery siding for full wagonload traffic.

Glasgow Suburban Electrification.—Sir Brian Robertson, Chairman of the British Transport Commission, recently inspected work on installation of overhead electric equipment on the Glasgow-Helensburgh line. The left-hand illustration shows him with Mr. James Ness, General Manager, and Mr. A. Watt, Assistant Electrical Engineer (New Works), British Railways, Scottish Region; and Mr. I. J. Hall, of Pirelli-General Cable Works Limited, inspecting an overhead line mast before concreting, between Knightswood South Junction and Whiteinch East Junction. In the right-hand illustration he is seen with Mr. Ness, Mr. Watt and Mr. C. E. Brendish, of Pirelli-General Cable Works, examining the line track movement of the training and testing length of overhead equipment in the overhead line depot at Whiteinch, Victoria Park.

Alsthom Type Drive in R.E.N.F.E. Locomotives.—In our issue of July 4, on page 20, it was stated that the Co-Co type locomotives, class 7600 of the Spanish National Railways, were fitted with Sécheron type drive. We have now been informed that this is incorrect and that the locomotives are fitted with Alsthom drive.

Post-Mortem on Driver of Train Involved in U.S.A. Bridge Accident.—A post-mortem examination of the driver of the train which, as reported in last week's issue, fell 50 ft. from an open lift bridge on the Central Railroad of New Jersey, U.S.A., into Newark Bay on September 15, has revealed that he died of a heart attack before the accident occurred. Little interruption to traffic is stated to have resulted from the accident, as the lift span concerned conveyed a section of double track, with a similar span alongside carrying two further tracks of the four-track line.

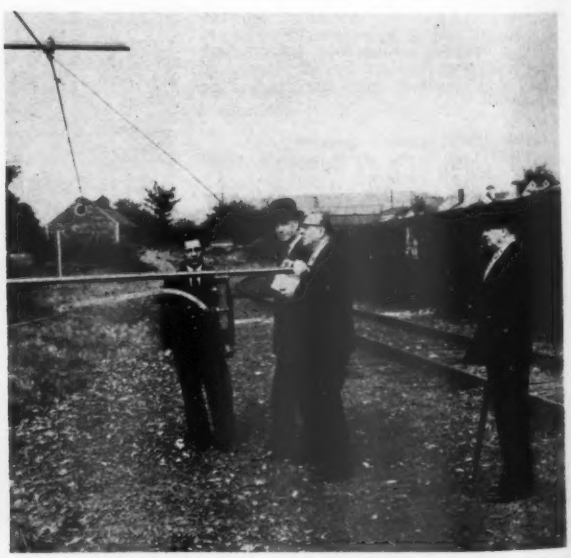
Demonstration Run of Bristol/E.C.W. Railbus at Elgin.—A demonstration run of one of the two Bristol/E.C.W. railbuses built for service in the Scottish Region of British Railways took place last Friday at Elgin, Morayshire. Mr. D. H. Cameron of Lochiel, Deputy Chairman of the Scottish Area Board of the B.T.C., and Mr. G. W. Stewart, Assistant General Manager of the Region, welcomed Brigadier H. W. Houldsworth, Lord Lieutenant of Moray; Mr. James Stuart, M.P. for Moray and Nairn; Col. Neil MacLean, M.P. for Inverness-shire; Major Robert Bruce, Scottish Council (Development and Industry) and Member, Advisory Panel on Highlands & Islands; Mr. Francis W. Walker, Convener of Inverness County Council; also dignitaries and representatives of local commerce and industry. Later, the railbus travelled to Aviemore where it was on display during the afternoon to the public. The vehicle is to be introduced on the 51-mile Speyside route between Elgin, Grantown-on-Spey and Aviemore. It was described in our August 22 issue.

Offer for Swansea & Mumbles Railway.—The South Wales Transport Co. Ltd. is reported to have made an offer to Swansea & Mumbles Railways Limited and to the Mumbles Railway & Pier Company, to acquire the whole of the irredeemable debenture stock of Swansea & Mumbles Railways Limited and the whole of the issued share capitals of the railway companies. The Swansea & Mumbles Railway is leased to and worked by the South Wales Transport Co. Ltd.

Integrated Programme of Marketing Courses.—This autumn, the Department of Management Studies of the London Polytechnic is arranging an integrated series of courses in each of the main sectors of marketing. The programme is intended to cover all important subjects and to serve the needs of particular levels of management. The courses have been planned to be of practical and immediate use. Discussion of marketing problems will be an essential feature. The first part of the programme will be completed in the September-December term of 1958. Details may be obtained from the Department of Management Studies, the Polytechnic, 309, Regent Street, London, W.1.

Film on Gearing Practice.—Coinciding with the International Conference on Gearing organised by the Institution of Mechanical Engineers and held in London from Tuesday to Thursday of this week, Shell-Mex & B.P. Limited last Wednesday arranged a showing of its film "An Introduction to Modern Gears," in Shell-Mex House, London, W.C.2. The film was planned as a training aid for schools, technical institutes and individual industrial concerns operating their own schemes for training apprentices; the style is that of the filmed lecture. After describing the main functions of gears, it illustrates the division of gears into two groups, those with parallel or intersecting shafts and the others. It discusses the special characteristics of rolling friction associated with the former group; the principles of

Mr. James Ness (centre) inspecting line mast before concreting



Examining line track movement of overhead equipment

gear design; and the salient features of the main techniques of cutting and generating gear teeth. The film, in black and white, runs for 31 min. and is available in 35 and 16 mm. gauges.

Circular Tickets from London to Belfast.—Circular tickets are now issued by British Railways, London Midland Region, to Belfast, by any one of three routes: Stranraer-Larne, Heysham-Belfast, or Liverpool-Belfast. The return journey may be made by any of these routes.

New Premises in Glasgow for Hoffmann Manufacturing Co. Ltd.—Larger premises for an office and stockroom have been acquired in Glasgow on behalf of the Hoffman Manufacturing Co. Ltd. of Chelmsford. The new address is 75, Robertson Street, Glasgow, C.2. The telephone No. is Central 0468/9; Telex No. 77523 and the telegraphic address is: Hoffmann Glasgow Telex. The engineer-in-charge is Mr. R. M. Speirs.

British and French Railway Exhibits at Model Railway Hobby Show.—The Model Railway Hobby Show which opened on Wednesday and closes tomorrow (Saturday) at the Central Hall, Westminster, London, includes two exhibits by the British Transport Commission and French National Railways. The B.T.C. stand indicates by working models the integration of road, rail and water transport. Covering an area of some 400 sq. ft. the Gauge "O" layout is controlled in a full-size replica of a crane control cabin. The S.N.C.F. stand shows a model of Co-Co locomotive No. CC7107, which hauled a train at over 200 m.p.h.; another exhibit is a model of a couchette coach.

Anglo-Dutch Trade Council Formed.—The Anglo-Dutch Trade Council, formed by the Federation of British Industries and the Association of British Chambers of Commerce, was inaugurated at The Hague on September 18. The main object is the promotion of mutual trade. Although there has been a Dutch Chamber of Commerce in Britain since 1890, until now there has been no British counterpart in Holland, Britain's best customer on the Continent. The Chairmen of the Council are Mr. Duncan Oppenheim, Chairman of the British American Tobacco Co. (London) Ltd., and Dr. Paul Rykens, lately Chairman of Unilever N.V., of Holland. Sir Paul Mason, British Ambassador at The Hague, is Honorary President of the Council, which consists of 20 British and Dutch businessmen. Founder members include:

British-American Tobacco Co. (Holland) Ltd.; British Thomson-Houston Co. Ltd.; Brush Group Services Limited; Dunlop Rubber Co. Ltd.; English Electric Co. Ltd.; Esso Petroleum Co. Ltd.; Firth Brown Tools Limited; General Electric Co. Ltd.; Guest, Keen & Nettlefolds Limited; Imperial Chemical Industries Limited; Metropolitan-Vickers Electrical Export Co. Ltd.; F. Perkins Limited; Saunders Valve Co. Ltd.; Shell Petroleum Co. Ltd.; Siemens Edison Swan (Export) Limited; Unilever Limited; and Unilever N.V.

Increased Profits for Ransome & Marles Bearing Co. Ltd.—Group profits of Ransome & Marles Bearing Co. Ltd. for the year ended June 30 increased from last year by some £486,000 at £1,774,744. The final ordinary dividend is 7½ per cent with a bonus of 2½ per cent, making an unchanged total of 15 per cent for the year. But this year besides having regard to the financial position of the company, the board has decided on a special interim dividend of 2½ per cent. Dividends and bonus will be paid on November 15. Group net profits rose to £666,581 (from £411,905) after tax of £756,400 (£537,798) and depreciation of £350,989 (£325,214). General reserve receives £309,273 (£150,000) and the carry forward is being increased to £489,480 (£376,662).

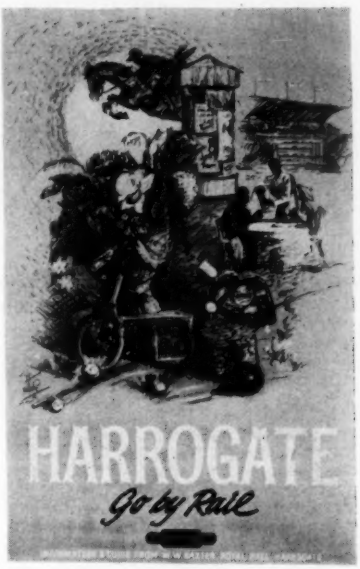
Permatred Flooring.—To avoid confusion with the trade name of a roofing material, the heavy-duty densified wood flooring material manufactured by Permali Limited is now being registered as "Permatred" in place of "Permadec." This change of name does not involve any alteration in the technical qualities of the material.

Silentbloc Dividend Maintained.—Silentbloc Limited has maintained the dividend on the £330,000 one-class capital at 25 per cent for the year ended May 31, 1958. Group profit increased from £241,361 to £297,237, and after taxation of £162,324 (£136,461), the net profit rose from £104,900 to £134,913. Asset replacement reserve received £75,000 (£47,750), the dividend took £47,437 (same), and the carry-forward was £51,939 (£39,463).

Reduced Interim Dividend for Churchill Machine Tool Co. Ltd.—The interim ordinary dividend of Churchill Machine Tool Co. Ltd. has been reduced from 10 per cent to 7½ per cent for last year. The directors are reported to have forecast a final dividend of not less than 15 per cent. This means that the total dividend for 1958 will be reduced to 22½ per cent from 27½ per cent paid the previous year. Because of the decline in the volume of new orders it was forecast earlier this year that the results for the year were unlikely to be up to the level of recent years but the board of directors was confident of its ability to recommend payment of dividends which would be regarded as satisfactory.

Naming Australian-Built Railcar for Malayan Railway.—The first of the six stainless-steel railcars built for the Malayan Railway by the Commonwealth Engineering Co. Ltd., of Granville, New South Wales, and described in our September 12 issue, was named recently at Kuala Lumpur Station. The car was named *Hang Tuah* by the Minister of Transport, Inche Obdul Rahman bin Haji Talib, who was called upon by Mr. D. D. Bartlett, General Manager, Malayan Railway, to unveil the name plaque on the railcar. Hang Tuah is the name of a 15th-century Malay warrior and popular hero.

North Eastern Region Publicity



New poster of Harrogate produced by the Public Relations & Publicity Officer, N.E. Region, British Railways, and designed by Mr. S. Agnew Mercer

B.E.A.M.A. Publicity Conference, 1958.—The British Electrical & Allied Manufacturers' Association publicity conference will be held at the Connaught Rooms, London, W.C.2, on November 11 and 12. The Chairman will be Mr. Lewis Hart, Publicity Consultant, the Brush Electrical Engineering Co. Ltd. The programme will include sessions concerned with the technical Press and with "Euromarket"; the

Naming the first Australian-built stainless-steel railcar at Kuala Lumpur

speaker at the latter session, on the Wednesday morning, will be Mr. J. O. Knowles, Chairman of the B.E.A.M.A. Council. Attendance at the conference is open to B.E.A.M.A. member firms only. Dr. Charles Hill, Chancellor of the Duchy of Lancaster, will be the guest of honour at the luncheon on November 12.

Tube Investments Company Develops New Mill.—A new electric resistance weld tube mill, which can produce E.R.W. steel tubes up to 5½ in. dia., with a wall thickness of ¼ in., and in lengths up to 60 ft., has been designed by the Tube Investments Limited subsidiary, Tube Products Limited, and is now in operation at the company's Falcon Works at Wednesfield. Previously, E.R.W. tubes made in this country have not exceeded 4½ in. in outside dia. The new mill holds promise of important applications for E.R.W. tubes, which can now be made in the increased size range for boiler tubes to BS.1654, ferrous tube to BS.806 Class "H," mechanical tubes to BS.1775 and tubes for the motor car industry to BS.980. Two new bays covering a floor space of 77,000 sq. ft. have been built to accommodate the mill and its ancillary plant. The mill can produce the new range of big tubes with a high standard of concentricity and surface finish. Tube Products Limited was formed in 1927 by Tube Investments Limited to manufacture E.R.W. tubes. It was the pioneer producer in Britain. Tube Investments now has three plants in the United Kingdom producing E.R.W. tubes.

Forthcoming Meetings

September 29 (*Mon.*).—Railway Correspondence & Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Paper on "The Lynton and Barnstaple Railway," by Mr. R. E. Tustin.

September 30 (*Tue.*).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "The North Eastern Region of British Railways," by Mr. R. A. Savill.

October 1 (*Wed.*).—British Railways (Southern Region) Lecture & Debating Society, at the Chapter House, St. Thomas' Street, S.E.1, at 6 p.m. Opening meeting.

October 1 (*Wed.*).—Electric Railway Society, at the Fred Tallant Hall, 153, Drummond Street, London, N.W.1, at 7.15 p.m. Paper entitled "A European survey," by Mr. G. W. Morant.

October 3 (*Fri.*).—The Railway Club, at 320, High Holborn, London, W.C.1, at 7 p.m. Members' meeting with paper by Mr. A. W. H. Pearsall: "The Furness Railway."

October 4 (*Sat.*).—Railway Correspondence & Travel Society: "The Sapper" rail tour.

October 7 (*Tue.*).—Permanent Way Institution, Leeds & Bradford Section, at the British Railways Social & Recreation Club, Ellis Court, Leeds City Station, at 7 p.m. Paper on "The Industrial Injuries Act," by Dr. S. Hulme, Medical Officer of British Railways, Southern Region.

October 7 (*Tue.*).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society, in the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. "The history of the Cunard Line," by Mr. A. D. Lobley, Publicity Manager, Cunard Steamship Co. Ltd.

October 7 (*Tues.*).—Railway Correspondence & Travel Society, Sheffield Branch, at Livesey Clegg House, Union Street, Sheffield, at 7.30 p.m. Illustrated paper on "The Leak & Manifold Railway," by Dr. J. R. Hollick.

October 8 (*Wed.*).—Railway Correspondence & Travel Society, West Midlands Branch, at the Engineering Centre, Birmingham (outside New Street). Mr. R. Shenton will give an illustrated description of his railway travels in Finland.

October 16 (*Thu.*).—Diesel Engineers' & Users' Association, at The Memorial Hall, the Institute of Marine Engineers, 76, Mark Lane, London, E.C.3, at 2 p.m. Annual general meeting.

Railway Stock Market

Though gains in share prices were smaller than of late, they have been more widely spread and the upward trend in stock markets continued. Buying was more selective, which is not surprising after the recent sharp gains that have carried many shares to fresh high levels for the year. The optimism ruling on the Stock Exchange continues to be based on the view that the down trend in industrial profits in evidence this year will be checked and replaced next year by an upward trend which will open up scope for higher dividends. The assumption is that the Government will take fresh steps to stimulate industry, and a further cut in bank rate to 4 per cent is widely believed to be imminent.

Railway securities have been rather more active with the best feature provided by Canadian Pacifics, which at $55 have reached a new high for the year; a week ago they were $51¼. The rise in Wall Street has helped dollar issues generally. Canadian Pacific preference stock strengthened fractionally to 54¼ and the 4 per cent debentures to 67¼. Elsewhere, White Pass shares at $14½ compared with $13½ a week ago.

United of Havana second income stock was firmer at 6¼ with San Paulo Railway 3s. units again quoted at 2s. Mexican Central "A" bearer debentures maintained last week's rise to 71.

Costa Rica ordinary stock was 16½ and the 6¼ per cent second debentures have changed hands at 90. Chilean Northern 5¼ per cent first debentures were dealt in at 46¼. Elsewhere, Brazil Railway bonds were 5¼.

Antofagasta ordinary stock has been steady at 14 with the preference stock 30 and the 5 per cent (Bolivia) debentures 96½. Paraguay Central prior debentures marked 11 and Guayaquil & Quito non-assented bonds were quoted at 90.

Midland of Western Australia ordinary stock was 6½, and in other directions, Nyasaland Railways shares held their recent rise to 12s.; the 3½ per cent debentures were 68½. In other directions, Barsi Light Railway ordinary stock was quoted at 24. West of India Portuguese capital stock changed hands at 78.

There was more business reported in shares of locomotive builders and engineers, but price movements were small. North British Locomotive, however, moved up sharply to 13s. 7½d. compared with 12s. 3d. a week ago. Beyer Peacock 5s. shares strengthened from 8s. 1½d. to 8s. 4½d. and in other directions, G. D. Peters were marked up from 23s. 9d. to 25s. Charles Roberts 5s. shares kept at 9s. 4½d. and elsewhere, Westinghouse Brake have risen from 39s. to 40s. 3d. a new peak for the year. On the other hand, Birmingham Wagon eased from 19s. 9d. to 18s. 1½d., but Gloucester Wagon 10s. shares rallied from 15s. 7½d. to 15s. 10½d. and Wagon Repairs 5s. shares at 10s. 3d. were within 3d. of the price ruling a week ago.

Vickers at 33s. 9d. were unaffected by the warning in the half-yearly statement that profits are expected to move lower in the last half of the year. A strong feature has been an advance in T. W. Ward from 78s. 3d. to 83s. 6d. a new peak for the year, which reflects higher dividend hopes in the market. British Timken with a rise from 51s. 9d. to 52s. 6d. were also at the best so far this year and Tube Investments have gained 2s. at 62s. Renold Chain rose 1s. at 37s. 6d. a new high for 1958, while the 10s. shares of the Dowty Group, which put of 2s. at 39s. were also at a peak, as were Pressed Steel 5s. shares which moved up to 19s. 7½d., compared with 18s. 9d. a week ago. Vokes 4s. shares held firm at the slightly higher level of 18s. 9d. while Metal Industries have risen from 36s. 1½d. to 38s. and George Cohen 5s. shares strengthened to 11s. Davy & United at 69s. 3d. were "ex rights" to the new shares, and Ruston & Hornsby moved up from 22s. 7½d. to 23s. 9d. Brown Bayleys moved higher at 33s. Associated Electrical firmed up from 53s. 3d. to 53s. 6d. and General Electric gained 1s. at 37s. 6d. while Crompton Parkinson 5s. shares have been firm at 11s. 6d. English Electric, with a rise on the week from 57s. 3d. to 58s. 9d. reached the highest level so far recorded this year.

OFFICIAL NOTICES

THE NIGERIAN RAILWAY CORPORATION invites applications for the following post:—

PERSONAL ASSISTANT TO CHIEF MECHANICAL ENGINEER

Duties: The officer will be responsible to the Chief Mechanical Engineer for conducting and co-ordinating technical investigations concerned with operations and the Workshop organisation for the repair of Steam and Diesel Locomotives and Rolling Stock. He may also be required to supervise repair and maintenance work and work in the Progress and Inspection Sections.

Qualifications: The candidate must have served an apprenticeship in a first class Locomotive Workshop, with at least two years' subsequent experience in the organisation and administration of a Railway Locomotive Workshop. He must have had experience in a Drawing Office and of production methods. Carriage and Wagon building and maintenance experience is desirable but not essential. Candidates should possess A.M.I.Mech.E. or have passed Parts I and II of the examination, or have wide experience in the duties set out above.

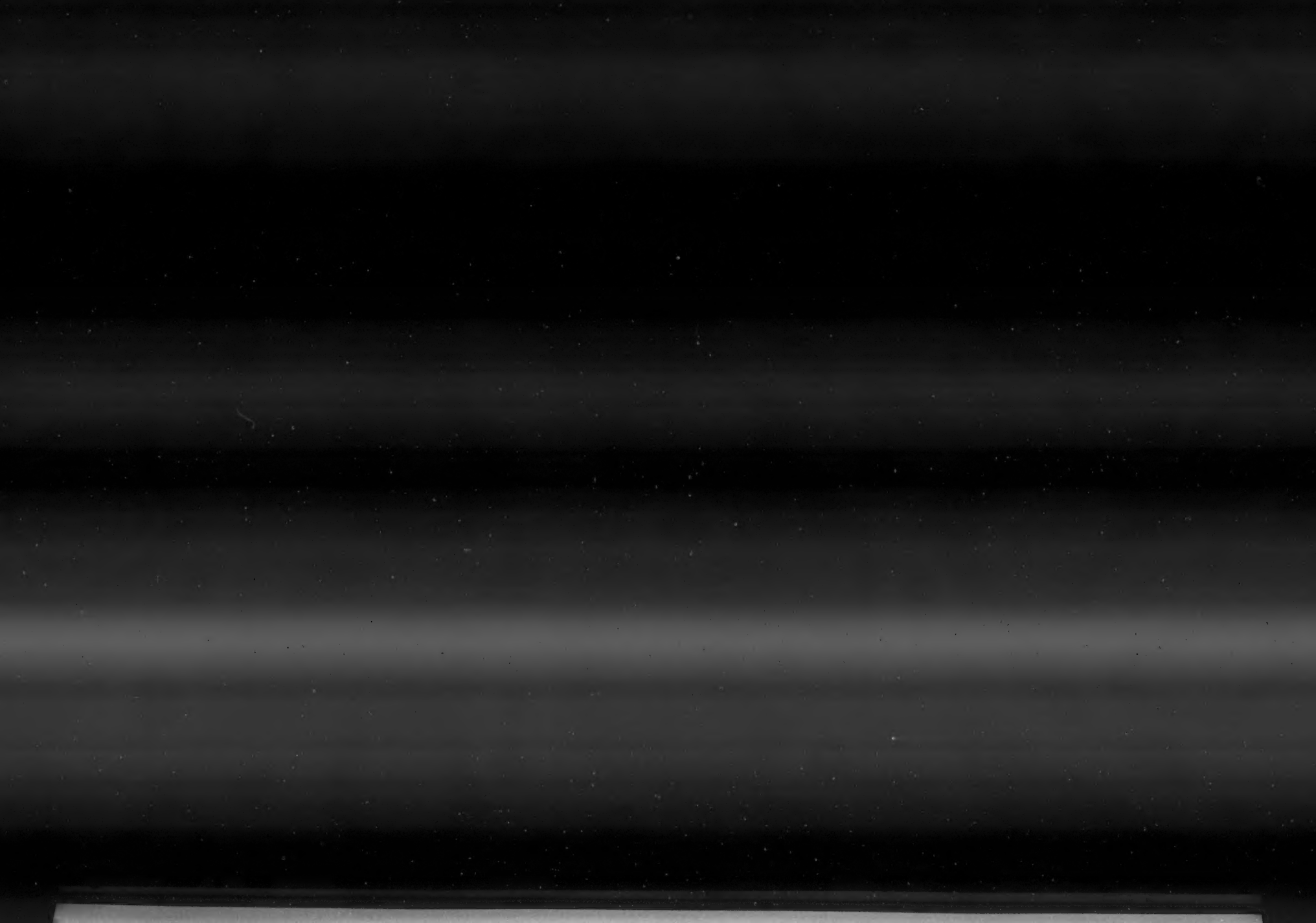
Salary: In scale £1,100 by £50 per annum to £1,900 (inclusive of Overseas Pay). Starting salary according to qualifications and experience. Appointments on contract will have a gratuity payable on completion at the rate of £18 6s. 8d. to £31 13s. 4d. for each completed month of service.

Tours: 15 months in Nigeria followed by 15 weeks' leave on full pay.

Quarters: Partly furnished quarters are provided at low rental.

Allowances: There are attractive family, travelling, transport and other allowances.

Send postcard before 14th October, 1958, mentioning the post and this paper for further particulars and application form to:—

THE LONDON REPRESENTATIVE,
NIGERIAN RAILWAY CORPORATION,
Nigeria House, 9 Northumberland Avenue,
London, W.C.2.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press, Limited, 33 Tothill Street, London, S.W.1.